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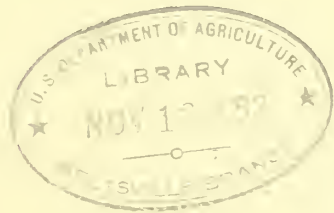
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VOL. IV, No. 8

August 1940

Foreign Agriculture

*..... a Review of Foreign
Farm Policy, Production,
and Trade*



Issued Monthly by
UNITED STATES DEPARTMENT OF AGRICULTURE
OFFICE OF FOREIGN AGRICULTURAL RELATIONS

WASHINGTON, D. C.

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NETHERLANDS AGRICULTURE AND THE WAR

By P. G. Minneman* and Catherine L. Davis**

The Netherlands has in the past been an important exporter of livestock products, but has depended heavily on overseas imports of feed and other raw materials. This raises the question as to what extent the war will necessitate reduction of its livestock production and exports, and in turn, what effect this reduction may have on the trade of other countries. Most of the Netherlands exports of dairy products, pork, and eggs have been to the United Kingdom, but this market is now cut off, and exports are shifting to Germany. The fact that the Netherlands is no longer able to supply the British market may permit other countries to ship to that market increased quantities of livestock products, in which the United States may share to some extent. This advantage, however, is more than offset by the loss of the Netherlands market for other more important agricultural exports, such as cotton, grain, tobacco, and fruits.

The Netherlands is one of the smallest countries in Europe, and its agriculture, like that of Denmark, is organized for intensive livestock production for export to neighboring markets. During recent years it has been the world's second largest exporter of eggs and cheese, the third largest exporter of bacon, and the fourth largest of butter. The Netherlands exports about half of its total production of butter and cheese, two-thirds of its eggs, practically all of its condensed milk, and about one-fifth of its total production of pork products. The most important markets for these products have been the United Kingdom, which took about 50 percent, and Germany, which took about 22 percent. In addition, the Netherlands has been an important producer and exporter of bulbs, seeds, vegetables, and hothouse products.

This small country with its limited resources of land, much of which is unsuitable for crop production, must rely on imports from overseas to supply a large part of the feed and fertilizer needed to maintain its large, intensive livestock industry. During recent years it has imported about 43 percent of the bread grain, 66 percent of the feed grain, and practically all of the raw materials for concentrated feed and fertilizers. In addition, the Netherlands relies entirely upon imports for such exotic products as cotton, tobacco, tropical fruits, and coffee.

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Figure 1.-Agricultural regions in the Netherlands.


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This dependence indicates that cutting off imports of feed into the Netherlands will force a sharp decline in livestock production to a level hardly more than sufficient to supply the country's domestic needs. The cessation of grain imports will affect the hog industry most severely and may force a reduction of more than 50 percent in pork production. Cutting off imports of oil meal and oilseeds, in addition to reduction of grain supplies, may force a reduction of about 25 percent in milk production. Exports of large quantities of butter are possible only because many consumers in the Netherlands use margarine in place of butter. Production of margarine depends upon imports of vegetable oils and oilseeds, which are now cut off. Consequently, consumers will be forced to use butter, leaving very little for export unless the consumption of butter and other fats and oils is greatly reduced through rationing.

Through the use of imported feeds to produce livestock products for export, the country has built up its volume of agricultural exports to a point where they constitute about 40 percent of the country's total export trade. The value of agricultural exports has been sufficient to pay for imports of all kinds of agricultural products and raw materials - including fertilizers and products not grown in the Netherlands, such as cotton and tobacco - and still maintain a small credit balance. Imports of agricultural products account for about 28 percent of the total value of all imports.

Even before the outbreak of the present war the Netherlands Government instituted measures to regulate agricultural production and trade. These measures were undertaken primarily to minimize the losses suffered from a declining export market. With the threat of war in 1938-1939 the control measures were intensified in an effort not only to protect producers but to insure adequate supplies of food and feed. Consequently, the country's agriculture was to some extent adjusted to war conditions before the war started. Although these measures provide the machinery necessary in an emergency, they are far from adequate to meet the present situation of practically complete cessation of imports from overseas.

The Netherlands has been an important outlet for agricultural products from the United States. In 1938 and 1939 it was our largest market in continental Europe, and ranked fourth among all the countries of the world, purchasing approximately 44 (1938) and 39 (1939) million dollars' worth of American agricultural products - consisting, in order of importance, of cotton, wheat, corn, fruit, tobacco, rice, linseed meal, and soybeans.

The inability of the United Kingdom to obtain part of its import requirements of butter, bacon, eggs, and cheese from the Netherlands will tend to increase the market for these products from other countries, particularly from British Empire countries; and the United States may eventually benefit to some extent from Britain's increased overseas requirements. However, the loss of the Netherlands as a market for United States products since the invasion of the country and the blockade of overseas trade will far more than offset any possible advantage to this country from increased exports to the British market.

## AGRICULTURAL PRODUCTION AND TRADE

The Netherlands is one of the smallest countries in Europe, with a land area of about 13,200 square miles. The maximum length of the country is about 175 miles, and its maximum width about 145 miles. The Netherlands is only a little larger than the State of Maryland, but it is one of the most densely populated countries of the world, with an estimated population of about 8.7 million, or 5 times that of Maryland.

The population is distributed throughout the country in many small cities. Amsterdam, the largest city, has only about a quarter of a million inhabitants; Rotterdam and The Hague have about 600,000 and 500,000, respectively. Recent industrial growth has tended to draw the population away from the farms. According to the census of 1930, about 20 percent of those gainfully employed were engaged in agriculture. The percentage is believed to have declined in recent years.



Figure 2.—Typical Dutch country scene. Dairying is the Netherlands' leading industry. (Courtesy Netherlands Ministry of Agriculture.)

The Netherlands is a low, flat country with a large area below sea level. Much of the land has been reclaimed by the use of dykes and drainage canals, which, with the numerous rivers, form a network of water courses. The soil of the country ranges from sandy loam to peat bog, and is particularly suited for pasture (see figure 1). About three-fourths of the land is under cultivation, about 39 percent is permanent meadows, and 7 percent is forests (see table 1). Except on tracts recently drained the Netherlands farms are small, approximately 45 percent being less than 13 acres.

The average Netherlands farmer is hardy and frugal, but not rich. He uses modern methods of drainage and cultivation and is supplied with a transportation system of good roads, streams, and canals which crisscross the whole country. More than 99 percent of the Netherlands is provided with electricity, furnishing most of the farms with light and power, but few have gas or water from central supply stations.

Netherlands farmers have promoted the development of agriculture by founding cooperative associations for purchasing raw materials such as fertilizers, cattle



feed, and seeds, as well as in manufacturing and selling farm products. The cooperative system has also been extensively used in making available agricultural credit and insurance. About half of the purchases of fertilizers and cattle feed and more than 70 percent of the production of butter, factory cheese, potato flour, and sugar is carried on by cooperatives, as well as about 90 percent of the sales of vegetables and 50 percent of the fruit sales. Cooperative organizations extend to almost every phase of agriculture.<sup>1</sup>

TABLE 1.—Land use in the Netherlands, 1938

| LAND USE                                 | ACREAGE<br>1,000 acres | PERCENTAGE DISTRIBUTION |                        |
|------------------------------------------|------------------------|-------------------------|------------------------|
|                                          |                        | OF CROPLAND<br>Percent  | OF ALL LAND<br>Percent |
| Grain:                                   |                        |                         |                        |
| Wheat .....                              | 311                    | 13                      | 4                      |
| Rye .....                                | 601                    | 25                      | 7                      |
| Barley .....                             | 107                    | 5                       | 1                      |
| Oats .....                               | 369                    | 15                      | 5                      |
| Total .....                              | 1,388                  | 58                      | 17                     |
| Forage crops:                            |                        |                         |                        |
| Feed roots .....                         | 127                    | 5                       | 1                      |
| Hay and green feed ..                    | 73                     | 3                       | 1                      |
| Rotation pasture ..                      | 48                     | 2                       | 1                      |
| Total .....                              | 248                    | 10                      | 3                      |
| Food crops:                              |                        |                         |                        |
| Potatoes .....                           | 224                    | 9                       | 3                      |
| Peas and beans .....                     | 126                    | 5                       | 2                      |
| Sugar beets .....                        | 108                    | 5                       | 1                      |
| Total .....                              | 458                    | 19                      | 6                      |
| Industrial crops:                        |                        |                         |                        |
| Flax .....                               | 51                     | 2                       | 1                      |
| Potatoes for starch<br>manufacture ..... | 76                     | 3                       | 1                      |
| Total .....                              | 127                    | 5                       | 2                      |
| Other cropland <sup>1</sup> .....        | 180                    | 8                       | 2                      |
| Total cropland .....                     | 2,401                  | 100                     | 30                     |
| Permanent meadow .....                   | 3,200                  | —                       | 39                     |
| Fruit .....                              | 223                    | —                       | 3                      |
| Woodland .....                           | 604                    | —                       | 7                      |
| Other land .....                         | 1,723                  | —                       | 21                     |
| Total area .....                         | 8,151                  | —                       | 100                    |

Compiled from *International Yearbook of Agricultural Statistics, 1938-39*.

<sup>1</sup> Gardens included in other cropland.

<sup>1</sup> *Handbook for the Netherlands and Overseas Territories*, Ministry of Foreign Affairs, The Hague, 1931.

Livestock production, the chief agricultural enterprise of the Netherlands, has been developed to a high degree of specialization. The types of soil in the country and the large nearby export markets have aided in this development. The intensive livestock production has been maintained, however, only by large imports of feed grains and other concentrate feed. There is also a national deficit in beef, fresh and dried fruits, and sugar, and, of course, in such foreign products as cotton, tobacco, and coffee.

While foreign markets for Netherlands livestock products were flourishing, the highly developed commercial machinery of the country encouraged the exchange of these products for imports of items in which deficiencies existed. However, the world depression beginning in 1932 caused a decrease in export demand, and in consequence the Netherlands developed one of the most extensive agricultural control programs to be found in any country. In this program emphasis was placed on protecting domestic producers of the products formerly imported, as well as on supporting prices of export products. The object of these relief measures was to restore the profits of agriculture generally and to prevent collapse of the export industries in which the Netherlands had a large capital investment.

Foreign trade is therefore of vital importance to the welfare of the country, since production is dependent upon imports of raw materials and upon export of the finished products. For imports, including nonagricultural, the Netherlands is dependent chiefly on Germany, which has provided approximately 21 percent of her total imports in recent years. Belgium provided about 11 percent and the United Kingdom about 8 percent. The Netherlands also depends largely on imports from the United States (about 11 percent) and the Netherlands Indies (about 7 percent).

Prior to 1935 Germany was the chief export outlet of the Netherlands, but since that time the United Kingdom has increased in importance, taking 22.7 percent in 1938 as opposed to Germany's 14.9 percent in that year.

#### CROP PRODUCTION

During recent years more than half the total grain requirements of the Netherlands and nearly all of the oilseeds and cake for cattle feed have been imported. Furthermore, domestic grain production requires extensive use of commercial fertilizers; these are also largely imported, a fact that makes even domestic grain production partially dependent on imports.

Only 30 percent of the total area is used for crop production (see table 1), but an additional 39 percent is in permanent meadow used for livestock pasture, and 3 percent is planted to fruits. The total acreage used for agricultural purposes is, therefore, nearly three-fourths of the total land area of the country. Woodlands are relatively unimportant, accounting for only 7 percent of the total area.

Domestic production of vital food and feedstuffs has increased considerably, compared with the pre-World War level (see table 2). The increase has been brought about through improved methods of cultivation, improved varieties, and an increase

in planted area. New land, reclaimed by draining formerly swampy areas in the Zuider Zee, has made available large additional tracts for crops. Despite increased domestic production, the Netherlands must obtain more than half its grain requirements and nearly three-quarters of its other feed requirements from abroad.

TABLE 2.—Grain supplies in the Netherlands.  
average 1909-1919 and average 1937-1939

| GRAIN     | ACREAGE | PRODUCTION |         | NET<br>IMPORTS      | TOTAL<br>SUPPLY     | DEGREE<br>OF SELF-<br>SUFFICIENCY |
|-----------|---------|------------|---------|---------------------|---------------------|-----------------------------------|
|           |         | PER ACRE   | TOTAL   |                     |                     |                                   |
|           | 1,000   |            | 1,000   | 1,000               | 1,000               |                                   |
|           | acres   | Bushels    | bushels | bushels             | bushels             | Percent                           |
| Wheat:    |         |            |         |                     |                     |                                   |
| 1909-1913 | 137     | 35.7       | 4,896   | 22,259              | 27,155              | 18                                |
| 1937-1939 | 315     | 43.3       | 13,654  | 22,942              | 36,596              | 37                                |
| Rye:      |         |            |         |                     |                     |                                   |
| 1909-1913 | 557     | 29.0       | 16,175  | <sup>1</sup> 11,720 | 27,895              | 60                                |
| 1937-1939 | 574     | 37.5       | 21,505  | <sup>2</sup> 2,158  | <sup>2</sup> 23,663 | 91                                |
| Barley:   |         |            |         |                     |                     |                                   |
| 1909-1913 | 68      | 48.1       | 3,270   | 11,249              | 14,519              | 23                                |
| 1937-1939 | 110     | 57.6       | 6,335   | 8,280               | 14,615              | 43                                |
| Oats:     |         |            |         |                     |                     |                                   |
| 1909-1913 | 346     | 52.2       | 18,070  | <sup>3</sup> 9,418  | 27,488              | 66                                |
| 1937-1939 | 378     | 76.1       | 28,754  | 2,311               | 31,065              | 93                                |
| Corn:     |         |            |         |                     |                     |                                   |
| 1909-1913 | 0       | 0          | 0       | 14,131              | 14,131              | 0                                 |
| 1937-1939 | 0       | 0          | 0       | 34,526              | 34,526              | 0                                 |

<sup>1</sup> In 1913 there was net exportation <sup>2</sup> 1939 only; in 1937 and 1938 there was net exportation

<sup>3</sup> Figures for 1912 not available

Compiled from *Verslagen en Mededeelingen van de Directie van den Landbouw*, 1939, and *Maand statistiek van den In-, Uit- en Doorvoer*.

Grain acreage, which makes up 58 percent of the country's total cropland, has increased by about 24 percent since 1909-1913. Yields per acre of all the principal crops have been increased, by about 20 percent in the case of wheat and barley to 45 percent in the case of oats. Through this increase in both acreage and yield, production of wheat has recently been nearly 3 times that of the period prior to the World War, and production of all grains has been increased by about 68 percent, the increase being about the same for bread grains as for feed grains. In the case of bread grains, this increased production permitted a reduction in imports, since consumption remained nearly constant. In the case of feed grains, however, even the increased domestic crops were not sufficient for the greatly expanded livestock production, and it was necessary to increase imports by nearly 50 percent in order to meet the increased feed requirements.

*Bread grains:* Of the total bread grain consumption, roughly two-thirds is wheat and one-third is rye. Most of the wheat is imported, but nearly all of the

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rye is grown domestically. Average quantities grown and imported annually in 1937-1939 are as follows:

|                                                           | WHEAT<br>1,000 tons | RYE<br>1,000 tons | TOTAL<br>1,000 tons | Percent |
|-----------------------------------------------------------|---------------------|-------------------|---------------------|---------|
| Grown domestically .....                                  | 410                 | 602               | 1,012               | 57      |
| Net imports (flour and meal<br>as grain equivalent) ..... | 689                 | 60                | 749                 | 43      |
| Total .....                                               | 1,099               | 662               | 1,761               | 100     |

Wheat is used almost entirely for human consumption, only about 20 percent of the total being used for feed and seed. Domestic production supplies only about 37 percent of wheat requirements; the remainder is imported, chiefly from the United States and Argentina. In 1938 the United States was the chief supplier of wheat, providing about one-third of the total wheat imports, while Argentina supplied about one-fourth. In 1935-1938 the Netherlands produced mostly winter wheat, both white and red, which accounted for about 87 percent of the acreage planted; but in 1939, because of an unusually severe winter, spring wheat accounted for 63 percent of the total acreage.

The Netherlands is far more nearly self-sufficient in rye than in wheat; domestic production of rye accounts for 91 percent of the total requirements. Most of the rye acreage is of the winter varieties. Rye is used as a supplementary bread grain, but in normal times is also used extensively for feed. The small imports of rye have been principally from Argentina, the Soviet Union, Canada, and Poland, which together provided about 30 percent of total imports.

*Feed grains:* About two-thirds of the feed grain requirements are normally imported. Corn is not grown in the Netherlands and therefore must be entirely imported. It is the most important feed, making up over half of the total feed-grain supply. Nearly all oats are grown domestically, but more than half the barley is imported. Supplies of each of these three feed grains and the quantities imported annually in 1937-1939 are as follows:

|                          | BARLEY<br>1,000 tons | OATS<br>1,000 tons | CORN<br>1,000 tons | TOTAL<br>1,000 tons | Percent |
|--------------------------|----------------------|--------------------|--------------------|---------------------|---------|
| Grown domestically ..... | 152                  | 460                | 0                  | 612                 | 34      |
| Net imports .....        | 198                  | 37                 | 966                | 1,201               | 66      |
| Total .....              | 350                  | 497                | 966                | 1,813               | 100     |

Imports of feed grains are almost entirely from overseas. Corn is imported primarily from Argentina and the United States; in 1938 the former supplied 64 percent and the latter 15 percent. Barley is also obtained from Argentina, although French Morocco supplied important quantities. Imports of oats are principally from Argentina and Canada.

*Forage and other crops:* Root crops for feed, principally mangel-wurzels, are relatively important as winter feed for cattle. Only about 5 percent of the total cropland is employed for this purpose, but yields are high; about 27 tons per acre.

Hay, greenfeed, and pastures on rotation cropland account for about 5 percent of the total cropland. Most of these crops are legumes, principally red clover.



TABLE 3.—Principal agricultural imports into the Netherlands by countries, average 1936-1938

| COMMODITY AND COUNTRY      | QUAN-<br>TITY<br>1,000<br>pounds | VALUE<br>1<br>dollars | COMMODITY AND COUNTRY             | QUAN-<br>TITY<br>1,000<br>pounds | VALUE<br>1<br>dollars |
|----------------------------|----------------------------------|-----------------------|-----------------------------------|----------------------------------|-----------------------|
| <b>MEAT</b>                |                                  |                       | <b>OIL MEAL AND CAKE</b>          |                                  |                       |
| Beef and veal:             |                                  |                       | Linseed cake                      |                                  |                       |
| Denmark .....              | 17.804                           | 1.668                 | United States .....               | 113,532                          | 1,858                 |
| Argentina .....            | 2,881                            | 189                   | Argentina .....                   | 4,828                            | 79                    |
| Brazil .....               | 974                              | 66                    | India .....                       | 4,285                            | 61                    |
| Total <sup>2</sup> .....   | 26,810                           | 2,774                 | Brazil .....                      | 2,206                            | 38                    |
| <b>GRAINS</b>              |                                  |                       | Canada .....                      | 2,151                            | 31                    |
| Corn:                      |                                  |                       | Belgium .....                     | 1,834                            | 31                    |
| Argentina .....            | 1,358.688                        | 15,511                | Total <sup>2</sup> .....          | 129,557                          | 2,112                 |
| United States .....        | 289.964                          | 4,044                 | Coconut cake                      |                                  |                       |
| Canada .....               | 96.808                           | 1,315                 | Netherlands Indies .....          | 71,349                           | 1,136                 |
| Portuguese Congo .....     | 44.019                           | 524                   | Philippines .....                 | 7,054                            | 97                    |
| Romania .....              | 10.310                           | 134                   | United States .....               | 778                              | 30                    |
| Total <sup>2</sup> .....   | 2,048.924                        | 24,683                | Total <sup>2</sup> .....          | 80,860                           | 1,264                 |
| Wheat:                     |                                  |                       | Peanut cake                       |                                  |                       |
| United States .....        | 345.006                          | 6,614                 | India .....                       | 35,679                           | 551                   |
| Canada .....               | 358.146                          | 6,416                 | France .....                      | 29,396                           | 486                   |
| Argentina .....            | 204.445                          | 4,188                 | Argentina .....                   | 6,997                            | 117                   |
| Romania .....              | 131.526                          | 2,114                 | Total <sup>2</sup> .....          | 75,538                           | 1,216                 |
| U.S.S.R. ....              | 95.983                           | 1,806                 | Soybean cake                      |                                  |                       |
| Germany .....              | 29.693                           | 379                   | United States .....               | 18,972                           | 300                   |
| Total <sup>2</sup> .....   | 1,236.222                        | 22,728                | Manchuria .....                   | 10,747                           | 169                   |
| Rye:                       |                                  |                       | Sweden .....                      | 3,234                            | 54                    |
| Argentina .....            | 45.469                           | 552                   | Total <sup>2</sup> .....          | 35,432                           | 564                   |
| U.S.S.R. ....              | 27.970                           | 429                   | <b>OTHER PRODUCTS</b>             |                                  |                       |
| Canada .....               | 20.983                           | 342                   | Cotton                            |                                  |                       |
| Poland .....               | 16.305                           | 133                   | United States .....               | 50,161                           | 6,453                 |
| United States .....        | 5.809                            | 101                   | India .....                       | 20,683                           | 1,946                 |
| Total <sup>2</sup> .....   | 139.976                          | 1,895                 | Belgium .....                     | 15,176                           | 1,876                 |
| Oats:                      |                                  |                       | Brazil .....                      | 9,920                            | 1,183                 |
| Argentina .....            | 76.426                           | 1,005                 | Belgian Congo .....               | 4,964                            | 666                   |
| Canada .....               | 11.882                           | 211                   | Peru .....                        | 4,131                            | 658                   |
| Poland .....               | 2.627                            | 25                    | Argentina .....                   | 3,586                            | 455                   |
| Total <sup>2</sup> .....   | 95.421                           | 1,297                 | Egypt .....                       | 2,676                            | 423                   |
| <b>OILSEEDS</b>            |                                  |                       | Total <sup>2</sup> .....          | 121,777                          | 15,065                |
| Linseed:                   |                                  |                       | Tobacco                           |                                  |                       |
| Argentina .....            | 677.043                          | 17,127                | Netherlands Indies .....          | 26,126                           | 6,227                 |
| Uruguay .....              | 13.077                           | 348                   | United States .....               | 17,599                           | 2,344                 |
| Belgium .....              | 4.049                            | 81                    | Brazil .....                      | 8,754                            | 1,013                 |
| Total <sup>2</sup> .....   | 697.564                          | 184,047               | Greece .....                      | 1,924                            | 314                   |
| Peanuts: <sup>3</sup>      |                                  |                       | Turkey .....                      | 1,428                            | 225                   |
| India .....                | 189.104                          | 5,377                 | Total <sup>2</sup> .....          | 66,126                           | 11,140                |
| British West Africa .....  | 45.954                           | 1,226                 | <b>COMMERCIAL FERTILIZERS</b>     |                                  |                       |
| China .....                | 47.261                           | 1,380                 | Salt peter, natural: <sup>4</sup> |                                  |                       |
| Manchuria .....            | 22.043                           | 608                   | Chile .....                       | 129,925                          | 2,088                 |
| Portuguese S. Africa ..... | 2.528                            | 75                    | United States .....               | 14,376                           | 179                   |
| Total <sup>2</sup> .....   | 337.534                          | 9,459                 | Total <sup>2</sup> .....          | 145,562                          | 2,289                 |
| Soybeans:                  |                                  |                       | Salt peter, other: <sup>4</sup>   |                                  |                       |
| Manchuria .....            | 182,492                          | 3,236                 | Germany .....                     | 164,262                          | 2,527                 |
| Canada .....               | 31,598                           | 546                   | Norway .....                      | 18,027                           | 293                   |
| Total <sup>2</sup> .....   | 224,701                          | 3,991                 | Total <sup>2</sup> .....          | 183,786                          | 2,868                 |
| Copra:                     |                                  |                       | Potash: <sup>4</sup>              |                                  |                       |
| Netherlands Indies .....   | 108.203                          | 3,273                 | Germany .....                     | 586,373                          | 5,032                 |
| Oceania .....              | 6,413                            | 196                   | France .....                      | 292,466                          | 2,249                 |
| Philippines .....          | 4.537                            | 118                   | Belgium .....                     | 52,081                           | 678                   |
| British Malaya .....       | 4.510                            | 116                   | Total <sup>2</sup> .....          | 972,729                          | 8,465                 |
| Portuguese S. Africa ..... | 3,026                            | 94                    | Phosphates: <sup>4</sup>          |                                  |                       |
| Total <sup>2</sup> .....   | 129,416                          | 3,872                 | Belgium .....                     | 537,856                          | 2,468                 |
| Palm kernel:               |                                  |                       | Germany .....                     | 485,655                          | 2,319                 |
| Belgian Congo .....        | 35,375                           | 832                   | France .....                      | 35,273                           | 177                   |
| Netherlands Indies .....   | 23,977                           | 581                   | Total <sup>2</sup> .....          | 1,059,277                        | 5,026                 |
| French West Africa .....   | 8,858                            | 215                   |                                   |                                  |                       |
| British West Africa .....  | 8.796                            | 189                   |                                   |                                  |                       |
| Total <sup>2</sup> .....   | 79,383                           | 1,928                 |                                   |                                  |                       |

<sup>1</sup> A guilder is valued at 58.167 cents, the average for 1936-38. <sup>2</sup> Total includes other countries not specified. <sup>3</sup> About 83 percent of the peanuts were shelled and 17 percent unshelled.

<sup>4</sup> For 1938 only.

Compiled from *Maandstatistiek van den In-, Uit- en Doorvoer*.

*Potatoes* account for about one-eighth of the total cropland and are the most important single crop next to grain. Production in 1936-1938 averaged 97.5 million bushels, with an average yield of nearly 300 bushels per acre. About one-fourth of the production is used for the manufacture of starch, some is used for feed, and about 15 percent is exported.

*Sugar beets* are an important food crop, and the pulp is used for feed. About 5 percent of the total cropland is devoted to their production. Even with high yields per acre, domestic production in the Netherlands amounts to only about 1,740,000 tons of beets and about 232,000 tons of sugar, which is only about one-fourth of the country's sugar requirements.



Figure 3.—Vegetables being delivered to market  
(Courtesy Netherlands Ministry of Agriculture)

*Vegetables* are grown extensively in the Netherlands, which has been known as the "Kitchen Garden of Western Europe" because of the production of such products as peas, beans, potatoes, tomatoes, and onions. These products, together with seeds, bulbs, and fruit, constitute the bulk of Netherlands horticultural exports. Exports have been largely to Germany, Belgium, Luxembourg, and the United Kingdom.

*Flower bulbs* have long been important and famous Dutch export products. About 100 million pounds of bulbs, with a value of about 14.6 million dollars, have been exported annually. Bulb production is concentrated along the western coast around Haarlem, on land once covered by the sea.

*Fruit*, largely grapes, apples, and pears, is grown principally in the central and southern parts of the country. Germany, Great Britain, and Belgium have been the principal markets for export surpluses of these products. Fancy grapes, grown largely in hothouses, have been the most important fruit export, amounting to about 23 million pounds (gross weight) per year. In recent years exports of apples have decreased, and the Netherlands has become a fairly important purchaser of apples, raisins, and citrus fruits in foreign markets.

*Oil cake and meal*: This high-protein feed is extensively used in the Netherlands, particularly for dairy feeding. Practically the entire requirement of this important feed, amounting to approximately 70 percent of the total of all kinds of concentrated feed used in the Netherlands, must be imported. Domestic production of the seeds used in the manufacture of concentrate feed is negligible. Rapeseed and linseed are the only raw materials produced domestically.

*Dairy Industry.* The Netherlands ranks as one of the world's leading producers of surplus dairy products, and about half of the total supply of butter and cheese is exported. Cattle and dairy production is the most important branch of the live-stock industry; dairy products account for about one-third of the value of the Netherlands agricultural production.

Netherlands cattle are bred especially for high milk production, beef being of secondary importance. Total annual production of butter is roughly 222 million pounds and of cheese about 277 million pounds, as compared with between 300 and 400 million pounds of beef and veal. Friesian black and white cattle are most numerous especially in the northern and western provinces of the country. Red and white cattle are also common in the Meuse, Rhine, and Yssel River valleys, and a black breed is found in the northeastern corner of the Netherlands; although these are less popular than the Friesian breed.

TABLE 5. CATTLE IN THE NETHERLANDS, 1934-1939

| CLASSIFICATION           | 1934  | 1935  | 1936  | 1937  | 1938  | 1939  |
|--------------------------|-------|-------|-------|-------|-------|-------|
| Calves under 1 year      | 545   | 494   | 415   | 514   | 557   | 520   |
| Milk cows having calved: |       |       |       |       |       |       |
| Once                     | 335   | 291   | 251   | 290   | 281   | 326   |
| Twice                    | 286   | 287   | 269   | 212   | 266   | 271   |
| Three times              | 261   | 270   | 260   | 251   | 276   | 271   |
| Older                    | 559   | 500   | 541   | 559   | 530   | 539   |
| Total cows               | 1,441 | 1,268 | 1,121 | 1,112 | 1,143 | 1,367 |
| Other cattle and calves  | 659   | 740   | 667   | 635   | 701   | 730   |
| Total                    | 2,100 | 2,008 | 1,788 | 1,747 | 1,844 | 2,107 |

Compiled from official sources and the 1939-1940 Yearbook of Agriculture.

An adjustment program in cattle production has been necessary since 1932 in order to reduce the surplus of cattle and dairy products resulting from decreased markets abroad. Difficulties have arisen due to a tendency of the cattle and dairy product adjustment programs to conflict. The cattle program has concentrated on reducing numbers of milk cows through government slaughter programs in order to reduce the large export surplus of butter, and has limited the number of calves which could be retained during a given period. At the same time subsidies have been paid to butter and fluid-milk producers to protect them against declining markets; this has unintentionally encouraged the retention of milk cows. Table 5 shows that although the total number of cattle has decreased slightly, the number of older cows, which have the highest milk yield, has increased. This has tended to increase the export surplus of dairy products such as butter and cheese, as is shown in table 6.

The total milk production is estimated at about 11 billion pounds annually, about three-fourths of which is used for manufacturing dairy products. The approximate distribution of the utilization of whole milk is as follows:<sup>2</sup>

<sup>2</sup> *L'Agriculture aux Pays-Bas*, Ministry of Agriculture and Fisheries, The Hague, 1937.



| Use                                | Million<br>pounds | Percent |
|------------------------------------|-------------------|---------|
| For feed on farms .....            | 440               | 4       |
| For human consumption (fluid) .... | 2,640             | 24      |
| For manufacturing dairy products . | 8,000             | 72      |
| Total .....                        | 11,080            | 100     |

Table 6.-Netherlands production of dairy products and margarine, 1935-1938

| PRODUCT                                                          | 1935 | 1936 | 1937 | 1938 |
|------------------------------------------------------------------|------|------|------|------|
| : Million pounds: Million pounds: Million pounds: Million pounds |      |      |      |      |
| Butter .....                                                     | 211  | 222  | 221  | 222  |
| Cheese .....                                                     | 260  | 269  | 277  | 277  |
| Milk, condensed .....                                            | 262  | 295  | 385  | 348  |
| Milk, powdered .....                                             | 56   | 67   | 62   | 63   |
| Margarine .....                                                  | 134  | 132  | 154  | 161  |
| :                                                                | :    | :    | :    | :    |

Compiled from *Jaarcijfers voor Nederland*, Central Bureau of Statistics, The Hague.



Figure 5.-Cheese being delivered to market.  
(Courtesy Netherlands Ministry of Agriculture.)

About 90 percent of the butter and 75 percent of the cheese are manufactured in creameries and the remainder on farms. By far the greater part of the milk, therefore, is delivered by farmers to creameries or dairies for manufacture; most of the skim milk is then soured and returned to farmers for use as hog feed.

Butter, cheese, and condensed milk are the most important dairy exports of the Netherlands. Approximately half of the total production of these is exported, and of the total exports of dairy products, 39 percent was shipped to the United Kingdom and about 11 percent to Germany.

The cattle industry is largely dependent on pasture for feed, but also uses some imported grains - especially high-protein concentrate feed in the form of oil meal and cake, both imported and manufactured from imported oilseeds and nuts. Cattle



are usually pastured more than half of the year, or about 190 days, and stabled about 175 days. During the winter period producing cows require nearly 1,000 pounds of concentrate feed per head.<sup>3</sup>

The export surplus of dairy products is largely dependent on imports of feed. As seen in table 3, these imports come almost entirely from overseas - grain from America and oilseeds and meal from all parts of the world.

The surplus of butter is also largely dependent upon use of margarine in the Netherlands. More margarine than butter is used in the country, the consumption of margarine being about 155 million pounds, compared to 140 million pounds of butter. In fact, the consumption of margarine is far in excess of the 83 million pounds of butter exported. Regulations have been issued to the effect that margarine must be mixed with butter under certain conditions, but for the most part the price of butter discourages its domestic use. If imports of fats and oils and of oilseeds are cut off, production of margarine will be impossible, and the Netherlands will be forced to use butter for domestic consumption. In this event exports of butter would be almost stopped.



Figure 6.-Distribution of cattle and hogs in the Netherlands, 1936. One dot represents 250 head. (Courtesy Netherlands Ministry of Agriculture.)

*Hogs:* Hog production is the next most prominent agricultural enterprise. The distribution of hogs tends to follow that of cattle (see figure 6) except in the

<sup>3</sup> *Ibid.*

northern part of the Netherlands, where butter is the chief product and the skim milk is largely processed, and in the northwest, where cattle farmers on clay soils keep few hogs. Hog feeding is the most advantageous method of utilizing the large quantities of skim milk and whey, and therefore is complementary to the dairy industry. Hogs account for about one-fifth of the value of total agricultural production of the country. Domestic grain, skim milk, and potatoes are the principal hog feeds, but it is necessary to supplement home feeds with large quantities of imported grains, particularly of corn from the Argentine and the United States.

The hog breeds of the Netherlands include an improved German race for fat pork, the large Yorkshire hog for export bacon, and cross-breeds of these. Hogs raised chiefly for fat pork are found principally in the cheese-manufacturing districts, where hog fattening is based on the use of whey.<sup>4</sup> The principal fat-hog region lies in the triangular area between Rotterdam, Amsterdam, and Utrecht. This is the best grass area in the Netherlands, and although the section produces little feed grain, its proximity to ports has made imported feed grains easily available.

Bacon-hog production, particularly for the export of Wiltshire sides to the United Kingdom, is carried on principally in that part of the country in which most of the milk is used for butter production and skim milk is consequently available for feed. This region is farther to the east, where sandy soils favor rye and potato growing. Bacon-hogs are slaughtered at much lighter weights than are hogs intended for the domestic and German fat-hog markets.



Figure 7.—Pork in bacon-packing plant. (Courtesy Netherlands Ministry of Agriculture.)

In 1927 and 1928 nearly half the hogs produced were slaughtered for export, but with the decline in the export market the proportion during recent years has declined to less than 25 percent. Since hogs for export are of much lighter weight than domestic hogs, the proportion of total pork production has been less than 20 percent. One estimate<sup>5</sup> places the recent total pork production at about 480 million pounds. Average exports in 1936-1938 amounted to 71.5 million pounds of pork and 15.3 million of lard.

<sup>4</sup> Reed, Harry E., "The Hog Industry in the Netherlands," *Foreign Agriculture*, v. 2, July 1938, pp. 305-322.

<sup>5</sup> *International Yearbook of Agricultural Statistics*, Rome, 1938-39.

TABLE 7.—Netherlands exports of specified agricultural products to principal markets, average 1936-1938

| PRODUCT                      | GREAT BRITAIN                                                                                                       |           | GERMANY       |           | BELGIUM AND LUXEMBOURG |           | FRANCE        |           | NETHERLANDS INDIES |           | TOTAL COUNTRIES |           |
|------------------------------|---------------------------------------------------------------------------------------------------------------------|-----------|---------------|-----------|------------------------|-----------|---------------|-----------|--------------------|-----------|-----------------|-----------|
|                              | QUAN-<br>TITY                                                                                                       | VALUE     | QUAN-<br>TITY | VALUE     | QUAN-<br>TITY          | VALUE     | QUAN-<br>TITY | VALUE     | QUAN-<br>TITY      | VALUE     | QUAN-<br>TITY   | VALUE     |
|                              | : 1,000 : Million : 1,000 : Million : 1,000 : Million : 1,000 : Million : 1,000 : Million : 1,000 : Million :       |           |               |           |                        |           |               |           |                    |           |                 |           |
| Dairy products: <sup>1</sup> | : pounds : dollars : pounds : dollars : pounds : dollars : pounds : dollars : pounds : dollars : pounds : dollars : |           |               |           |                        |           |               |           |                    |           |                 |           |
| Butter .....                 | 82,780:                                                                                                             | 15,300:   | 26,450:       | 6,633:    | 5,041:                 | 856:      | 648:          | 104:      | 2,215:             | 431:      | 121,158:        | 24,111    |
| Cheese .....                 | 22,802:                                                                                                             | 1,921:    | 36,589:       | 5,724:    | 43,703:                | 4,653:    | 7,960:        | 1,320:    | 1,834:             | 255:      | 130,770:        | 16,040    |
| Condensed milk:              | :                                                                                                                   | :         | :             | :         | :                      | :         | :             | :         | :                  | :         | :               | :         |
| Sweetened .....              | 141,200:                                                                                                            | 6,097:    | 588:          | 43:       | 3,165:                 | 104:      | 2,795:        | 156:      | 20,436:            | 1,368:    | 301,024:        | 16,556    |
| Unsweetened .....            | 9,268:                                                                                                              | 508:      | 1,014:        | 58:       | 533:                   | 27:       | 967:          | 48:       | 2,918:             | 196:      | 60,641:         | 3,701     |
| Pork products: <sup>2</sup>  | :                                                                                                                   | :         | :             | :         | :                      | :         | :             | :         | :                  | :         | :               | :         |
| Bacon, salted .....          | 56,380:                                                                                                             | 10,464:   | -             | -         | 39:                    | 6:        | -             | -         | -                  | -         | 56,420:         | 10,471    |
| Bacon and salt pork .....    | 114:                                                                                                                | 24:       | 10,357:       | 1,430:    | 324:                   | 37:       | 231:          | 46:       | -                  | -         | 11,545:         | 1,599     |
| Pork, fresh .....            | -                                                                                                                   | -         | 1,276:        | 215:      | 936:                   | 114:      | -             | -         | -                  | -         | 3,518:          | 486       |
| Lard, pure .....             | 1,774:                                                                                                              | 179:      | 939:          | 101:      | 5,392:                 | 463:      | 11:           | 1:        | -                  | -         | 15,313:         | 14,282    |
| Poultry products:            | :                                                                                                                   | :         | :             | :         | :                      | :         | :             | :         | :                  | :         | :               | :         |
| Eggs, in shell .....         | 91,307:                                                                                                             | 9,642:    | 64,852:       | 8,036:    | 4,722:                 | 411:      | 482:          | 60:       | -                  | -         | 168,420:        | 18,888    |
| Poultry:                     | Numbers:                                                                                                            | Numbers:  | Numbers:      | Numbers:  | Numbers:               | Numbers:  | Numbers:      | Numbers:  | Numbers:           | Numbers:  | Numbers:        | Numbers:  |
| Live .....                   | 9,514:                                                                                                              | 3:        | 1,411,412:    | 652:      | 84,397:                | 22:       | 12,275:       | 1:        | -                  | -         | 1,641,522:      | 733       |
|                              | : 1,000 :                                                                                                           | : 1,000 : | : 1,000 :     | : 1,000 : | : 1,000 :              | : 1,000 : | : 1,000 :     | : 1,000 : | : 1,000 :          | : 1,000 : | : 1,000 :       | : 1,000 : |
| Dressed <sup>2</sup> .....   | 1,781:                                                                                                              | 335:      | 2,605:        | 413:      | 1:                     | 1:        | 13:           | 2:        | -                  | -         | 4,991:          | 880       |
| Vegetables: <sup>2</sup>     | :                                                                                                                   | :         | :             | :         | :                      | :         | :             | :         | :                  | :         | :               | :         |
| Potatoes .....               | 102,538:                                                                                                            | 917:      | 85,712:       | 1,055:    | 169,233:               | 2,291:    | 133,120:      | 190:      | -                  | -         | 836,828:        | 9,635     |
| Onions .....                 | 217,012:                                                                                                            | 2,342:    | 6,598:        | 58:       | 18,884:                | 187:      | -             | -         | -                  | -         | 255,729:        | 2,718     |
| Tomatoes .....               | 38,150:                                                                                                             | 1,450:    | 46,084:       | 1,756:    | 2,211:                 | 49:       | -             | -         | -                  | -         | 93,984:         | 3,697     |

Gross weight in 1936, net in all others  
 Compiled from *Nederlandsche Jaarstatistiek van den In- en Uitvoer*



Exports have been almost entirely in the form of bacon (Wiltshire sides) to the United Kingdom, and salt pork to Germany. These two kinds have made up over 90 percent of the total pork exports. In 1938 the United Kingdom alone took about 78 percent of the total pork exports, and the Netherlands ranked second only to Denmark among foreign suppliers of the British market. Most of the salt pork and fresh pork and part of the lard have been exported to Germany.

TABLE 8.—Hog numbers in the Netherlands in May, 1935-1939

| CLASSIFICATION                               | 1935                   | 1936                   | 1937                   | 1938                   | 1939                   |
|----------------------------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|
|                                              | : Thou- :<br>: sands : | : Thou- :<br>: sands : | : Thou- :<br>: sands : | : Thou- :<br>: sands : | : Thou- :<br>: sands : |
| Pigs under 6 weeks .....                     | 319                    | 401                    | 313                    | 377                    | 375                    |
| Pigs over 6 weeks and under 132 pounds ..... | 658                    | 649                    | 573                    | 585                    | 610                    |
| Hogs of 133 to 220 pounds .....              | 199                    | 240                    | 190                    | 203                    | 207                    |
| Hogs over 220 pounds .....                   | 191                    | 210                    | 181                    | 185                    | 191                    |
| Breeding sows .....                          | 152                    | 173                    | 144                    | 183                    | 165                    |
| Breeding boars .....                         | 5                      | 6                      | 5                      | 5                      | 5                      |
| Total .....                                  | 1,524                  | 1,679                  | 1,406                  | 1,538                  | 1,553                  |

Compiled from official sources.

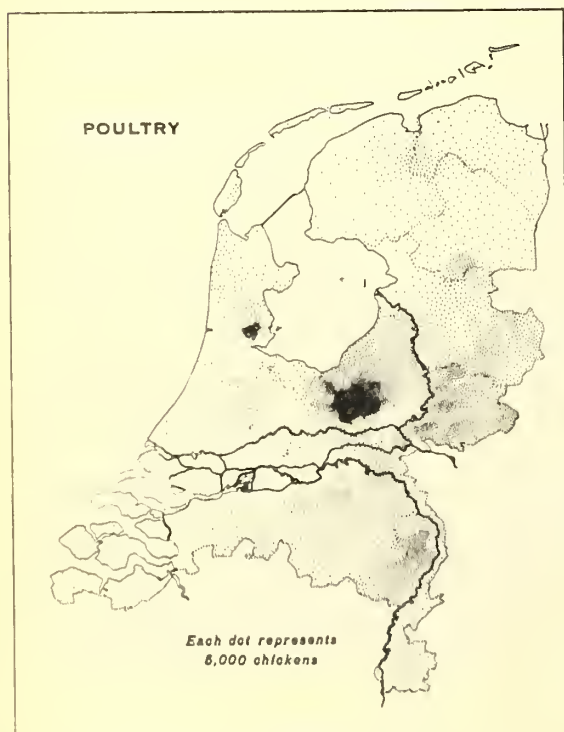


Figure 8.—Distribution of poultry in the Netherlands 1936. One dot represents 5,000 chickens. (Courtesy Netherlands Ministry of Agriculture.)

A government production control program was set up under crisis legislation in 1932 in an attempt to protect the industry from sharp declines in the export market. In 1932-1933 the British Government placed quotas on the exports of bacon and hams from countries outside the British Empire. In recent years the Netherlands' quota was equivalent to about 10 percent of total British imports from foreign countries. The decline in the export market forced the government to limit the number of hogs that could be kept at any one time and to specify the proportion of the total number of hogs that might be kept as breeding sows. The number of hogs was reduced by about one-third, and the number slaughtered for export declined to less than one-third of the 1930-1932 level.

*Poultry:* Poultry and eggs are the third most important group of livestock products in the Netherlands. The value of egg exports has exceeded that



of pork products during recent years. The poultry industry is heavily dependent upon the export market; about one-half of the eggs are exported. Annual production in 1938 was estimated at 2,150 million eggs, whereas exports in 1936-1938 averaged about 1,100 million.

Production expanded in the period following the World War, and by 1931 most of the egg production was exported - about 80 percent to Germany. Since that time the market has shifted, and by 1938 approximately 57 percent of the total eggs exported were being sent to the United Kingdom and only about 38 percent to Germany. These two buyers, therefore, together purchase approximately 95 percent of the Netherlands' egg exports.



Figure 9.-Marketing eggs. (Courtesy Netherlands Ministry of Agriculture.)

Poultry numbers have increased steadily during recent years, as shown in table 9. Two native breeds, Barndelders and Welsumers, are produced, in addition to Leghorns, Wyandottes, and Rhode Island Reds. The native breeds produce dark brown eggs greatly in demand in England.

TABLE 9.-Poultry numbers in the Netherlands on May 1, 1935-1939

| CLASSIFICATION | 1935        | 1936        | 1937        | 1938        | 1939        |
|----------------|-------------|-------------|-------------|-------------|-------------|
|                | : Thousands | : Thousands | : Thousands | : Thousands | : Thousands |
| Chickens:      | :           | :           | :           | :           | :           |
| Hens .....     | 13,019      | 13,816      | 14,031      | 16,198      | 18,112      |
| Others .....   | 15,464      | 13,972      | 13,673      | 13,448      | 14,693      |
| Total .....    | 28,483      | 27,788      | 27,704      | 29,646      | 32,805      |
| Ducks:         | :           | :           | :           | :           | :           |
| Hens .....     | 309         | 286         | 300         | 379         | 441         |
| Others .....   | 552         | 488         | 514         | 496         | 581         |
| Total .....    | 861         | 774         | 814         | 875         | 1,022       |

Compiled from *Maanschrift van het Centraal Bureau voor de Statistiek*.

## WARTIME AGRICULTURAL CONTROL MEASURES

The dependence of the Netherlands' economy on foreign trade required that government action be taken as soon as the present European war threatened. The difficulties of shipping, of distributing available supplies without exorbitant rise in price, and of obtaining and conserving necessary food and feed supplies had been demonstrated in the World War.

An agricultural control program providing authority whereby production, exports, imports, and price policy could be controlled has been in effect in the Netherlands since 1932. This crisis legislation, however, provided control only for the protection of producers. The war emergency in September 1939 made it necessary for the government to requisition supplies and to extend control to the distribution and consumption of food and feed supplies, as well as to use full authority in controlling agricultural production.

The following laws were passed on June 24, 1939:

1. The General Requisition Act,
2. The Distribution Act of 1939,
3. The Price Excess and Hoarding Act of 1939,
4. The Sea Vessels Requisition Act of 1939.

By the passage of these laws the Netherlands established a completely controlled economy. Every phase of economic life was covered, either by the administrative set-up established under the crisis legislation or by the laws.

The size of the Netherlands and the homogeneity of the farm population facilitated government control and contributed to the success of the control program in effect since 1932. The Netherlands farmer prices himself on his use of modern and scientific methods, and his attitude has been that of cooperation with the government in advancement of agricultural methods. These factors have made it possible for the government to obtain a high degree of cooperation in putting wartime measures into effect.

## PRODUCTION CONTROL

Since September 1939 special attention has been devoted to increasing the domestic production of food and feed crops in the Netherlands. Only the most essential crops (such as grain, potatoes, sugar beets, beans, peas, flax, rapeseed, and fodder crops) are permitted. Government subsidies have been available to producers of these crops, and all other crops are subject to license. No data are available on the efficacy of this change of emphasis. The country's self-sufficiency might be expanded to some extent, although complete independence of imports would be impossible. In the case of bread grains alone an increase of 75 percent in production would be required.

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The most important change required to increase crop production was the shift in emphasis on land use. Special measures passed since the outbreak of war required pasture land to be plowed up and made available for crop production. No available tillable land was allowed to remain idle, and all meadows that were located so as to be suitable for crops were to be planted. Farmers were to be compensated for plowing up their meadows by a larger allotment of mixed feed.

Control of production was carried out, under the supervision of the Minister of Economic Affairs, by provincial production commissioners in each of the provinces of the Netherlands. Each commissioner was assisted by a committee of local farmers, who aided in the farm-to-farm administration of the program. The commissioners were in charge of the local execution of regulations to increase agricultural production, and were empowered to issue permits, dispensations, and supplementary regulations.

#### PRICE CONTROL

Measures designed to control prices were more inclusive before the war than in any other democratic country.<sup>6</sup> Price control was designed to aid producers of the major export products and made it possible for them to carry out the adjustments that appeared to be in the best interests of the national economy.

Minimum prices for cattle, dairy products, and eggs were fixed in relation to world prices at a level sufficient to cover production costs and permit a reasonable profit. Hog prices were regulated by fixing prices for export-bacon hogs, which in turn influenced the prices for hogs for domestic consumption. Fixed prices for export-bacon hogs did not always assure a market at the fixed price for all the hogs offered by the farmers. The export agency accepted only as many as it could handle, which has had the effect of shifting the surplus from bacon to fat hogs. The authorities made no attempt to prevent hog prices from rising, and under such a system it was possible to control bacon hogs as long as a surplus existed. In order to encourage grain production, grain prices were fixed at a high level in relation to world prices prior to the time of planting.

In September 1939 the Government of the Netherlands announced that no objection would be made to an increase in sales prices of manufactured products above the level which prevailed in August 1939, as long as the increase was motivated by an increase in the manufacturing or import costs. It was stated that if the business community would heed this policy, the government would not invoke special provisions of the Price Excess and Hoarding Law of 1939.

#### IMPORT CONTROL

Import quotas, administered by government monopolies, have been in effect since 1932. The outbreak of war in September caused the enactment of the Import Emergency Law in an effort to insure supplies of the imports indispensable for the

<sup>6</sup> *Foreign Agriculture*, Feb. 1939, pp. 74-77.

economic life of the nation. The provisions of the Law applied to all contraband, conditional contraband, and goods listed as either of these, in order to give the administration control over importation of all such goods. The *Algemeene Nederlandsche Invoer Centrale* issued import licenses. Controlled items comprised more than 90 percent of all the Netherlands' normal imports.

#### EXPORT CONTROL

In August 1939 the export monopolies established under the agricultural crisis legislation as a means of giving agricultural support to farmers were expanded to meet the war situation. For the most part these changes consisted of the inclusion of vital supplies on the list of goods requiring export licenses. It was no longer permitted freely to export grains, fats and oils, sugar, or any of the commodities of which there is a national deficiency. The control of the various Centrals established under the crisis legislation was expanded to include all products that might be needed for purposes of domestic consumption.

#### RATIONING

In May 1938 the growing war tension in Europe caused the Netherlands Government to establish a system for maintaining a 2-months' grain supply in the country at all times. It was determined that supplies of approximately 385,000 tons in excess of actual needs should be stored in ports protected by the inundation defense line, principally in Amsterdam and Rotterdam. The responsibility for the maintenance of these supplies was placed on the grain importers and consumers by requiring them at all times to keep a grain stock equal to their normal requirements for two months. Under authority of the Farm Crisis Act a committee in charge of grain for human consumption and one for grain for animal consumption were set up to supervise the execution of these plans.

In August 1939 it became clear to the Netherlands Government that further precautionary measures would have to be taken. At that time the government took an inventory of stocks of all agricultural products, livestock, and feed in the hands of farmers, dealers, and manufacturers.<sup>7</sup>

A Government Bureau for Food Provisioning in Time of War was set up in September 1939 under authority of the Crisis Act.<sup>8</sup> Grain was purchased from growers and stored in the warehouses of dealers, who received compensation similar to that paid since 1932 for storage of domestic wheat bought by the government.

*Rationing of feed:* The government decided that feed should be used cautiously and efficiently. Toward this end, it was provided that only mixed feed should be

<sup>7</sup> In the first few days during which the inventory was taken it was necessary to proclaim an embargo on the delivery and transportation of the products to be inventoried. Processing of products to be inventoried was also forbidden at first except in unusual cases, in which a special permit might be obtained.

<sup>8</sup> Under the supervision of the Bureau were 11 provincial food commissioners and their local representatives, who have extensive duties of food and feed provisioning.



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supplied to cattle raisers. Experts determined the raw materials of which the feeds must be composed. The use of grass, hay, beet pulp, mangel-wurzels, carrots, and similar products was free, since these decrease dependence on foreign feed sources.

The quantity of standard feeds consumed was controlled by the Government Bureau for Food Provisioning in Time of War by issuing ration tickets. Farmers could obtain these tickets from the food commissioners and get mixed feed from dealers or cooperative purchasing societies against delivery of the tickets. Ration tickets were issued for quantities limited according to the number of animals, time of year, and type of farm, and the tickets were required before transportation or delivery could take place. The dealers and cooperative societies then delivered these tickets to the provincial food commissioners in exchange for others, by which raw materials for mixed feed could be obtained from wholesalers or importers. The latter obtained raw material from the *Graaninkoopbureau* (Grain Purchasing Bureau).

Since August 1939 livestock producers have been required to use concentrated feed in mixed form only. There are many types of mixed stock feed produced in the Netherlands in the form of meals, cakes, lumps, and mixed grains. These mixtures utilize grain meals, root byproducts, oil meals, vegetable meals, and various minerals.⁹ The mixtures to be used are designated by a special committee.

Rationing of food: On September 30, 1938, a critical time in the European political situation, an Emergency Food Provisioning Law was passed authorizing the Minister of Economic Affairs to provision food in time of war or under other extraordinary circumstances.¹⁰ Sugar rationing took effect on October 16, 1939, not because of an immediate shortage but to insure that everyone would be able to obtain equal amounts.¹¹ This was the first foodstuff to be rationed. Special regulations were issued for the sick and others needing additional quantities.

In December 1939 the Netherlands Central Foodstuffs Ration Council was established to assume control of the apportioning of foodstuffs and the enforcement of measures toward that end. Under this organization, all foods considered vital for human consumption were to be controlled.

OTHER GOVERNMENT REGULATIONS

In order to insure efficient distribution the Distribution Law of 1939 enables the Netherlands Government to control completely certain goods designated by

⁹ Mixed feed for cattle: 10 percent dried beet pulp; 10 percent corn meal, barley meal, or rye meal; 10 percent corn gluten meal or rapeseed meal; 10 percent potato beet product (or 5 percent of wheat middlings and bran plus 5 percent rye meal, barley meal, dried pulp, pea meal, copra meal, or babasu meal); 7.5 percent copra meal or palm kernel meal; 30 percent linseed meal (or 20 percent linseed meal plus 10 percent sesame meal); 20 percent peanut meal; 2.5 percent minerals. (Consular report, Rotterdam, November 20, 1939.)

¹⁰ The date of expiration of this law was extended from December 31, 1939, to December 31, 1940.

¹¹ For 4 days preceding the first day of rationing, shopkeepers were prohibited from selling sugar in order to make sure that all stores would have enough on the sixteenth. Sugar rations were set at half a kilogram (1.1 pounds) per person, about three-fourths of normal consumption.

the Minister of Economic Affairs. Each bureau established under this law is responsible for a specific commodity. Under the law, commercial fertilizers, cotton and jute, hides and skins, and wool were placed under government control, and all available supplies of these commodities were requisitioned.

EFFECTS OF THE WORLD WAR, 1914-1918

Some indication of the effects of war on Netherlands agricultural economy and the adjustments necessary in agricultural production and exports under present conditions may be obtained from an examination of the effects of the World War in 1914-1918. In the World War the Netherlands remained neutral, yet essential supplies of certain goods were reduced to such an extent that by 1918 exports were almost completely stopped, and the people were threatened with famine.

EFFECT ON PRODUCTION AND EXPORTS

In general, the Netherlands' reliance upon imported supplies of feed and other agricultural raw materials has not changed materially since the World War. Domestic grain production has been greatly increased in both bread and feed grains, but livestock numbers and feed requirements have also increased. In 1937-1939 the average production of grain amounted to 11,624,000 tons, compared with 967,500 tons in 1909-1913, an increase of 68 percent. In the case of bread grains, wheat and rye, the increased production was reflected in smaller imports, but in the case of feed grains it was not sufficient to offset the increased requirements for livestock feed, and consequently the quantities of feed grain, principally corn, imported in 1937-1939 were about 50 percent greater than in 1909-1913. The percentage of the grain requirements imported before the World War and during recent years is as follows:

	PERCENTAGE OF GRAIN REQUIREMENTS IMPORTED	
	1909-1913 Percent	1937-1939 Percent
Bread grain	62.4	42.6
Feed grain	69.0	66.2
All grain	65.2	54.6

Figure 10 shows the effects of the World War on grain supplies and exports of pork. Netherlands imports of grain were not greatly reduced until the blockade was tightened through the unrestricted submarine campaign in 1917, and by 1918 grain imports had been almost completely cut off, with total imports for that year equal to only 6 percent of the normal import requirements. With energetic government measures designed to increase domestic crops, production was maintained almost at the pre-war level in spite of greatly reduced supplies of imported commercial fertilizer. Domestic production, however, normally supplied only about one-third of the requirements.

The hog industry is most dependent on imported supplies of feed grain; pork production, therefore, was most severely affected during the war. In addition to the shortage of grain, the smaller supplies of milk greatly reduced the quantities of

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skim milk and whey that could be used for feed, since the proportion of milk required for human consumption greatly increased as milk production declined. As a result of the feed shortage, pork production declined to a fraction of its normal volume; and supplies available for export in 1918 were reduced to one-tenth of 1 percent of the 1913 level. Not until 1924 did pork exports again reach pre-war levels.

Figure 11 shows the exports of butter as related to the import supplies of oil-meal feed during the war period. Dairy production is heavily dependent upon supplies of concentrated high-protein feed to supplement hay and other roughage, particularly for winter feeding. The blockade forced a rapid reduction in import supplies of oil meal and of oilseeds for domestic crushing in 1917, and cut off imports completely in 1918. Farmers could no longer feed concentrates and were obliged to reduce the feeding of grain. In consequence, milk production declined by about one-fourth. Since the quantity of milk required for direct human consumption tended to remain constant, the proportion available for manufacturing was greatly reduced, and the production of butter probably declined by fully one-third.

Failure to obtain import supplies of vegetable fats and oils for the manufacture of margarine forced consumers to use butter instead; consequently, the supplies of butter available for export were reduced in 1918 to only 6 percent of the 1913 level. Butter exports did not again reach the 1913 level until 1925.

#### AGRICULTURAL RELIEF MEASURES

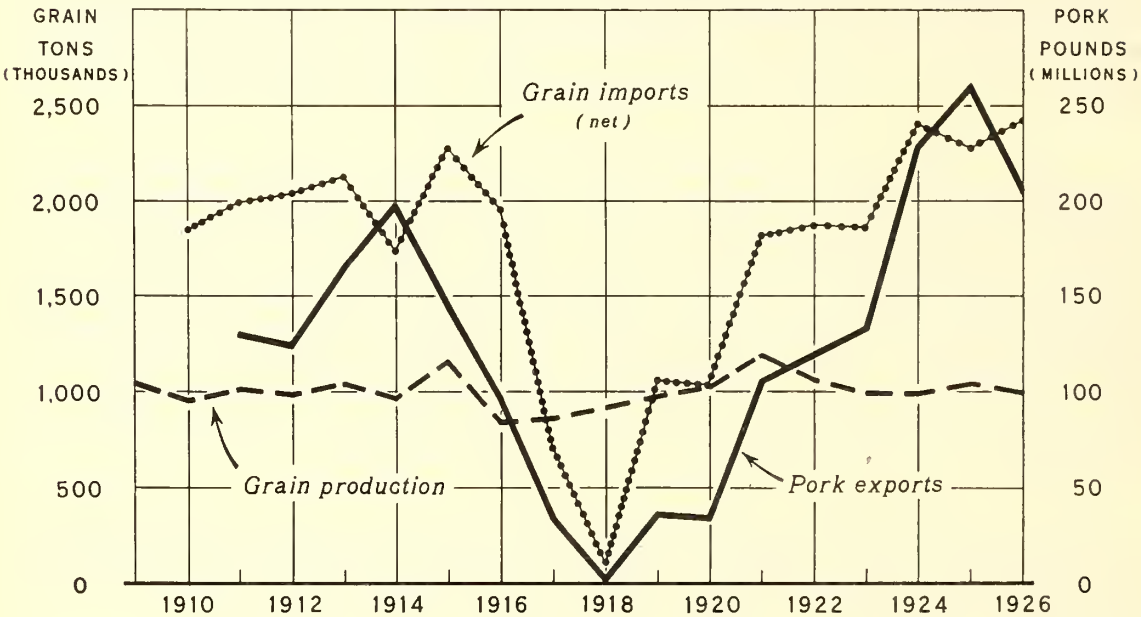
The stringency of the war situation in 1914 forced the Netherlands Government to take emergency measures. Attention was centered on the following problems: (1) maintenance of imports of raw materials; (2) regulation of exports; and (3) increase and adaptation of home production. At first it was assumed that control of imports and regulation of exports would be sufficient, but it was soon found that the third problem was the most important of all when the war almost entirely cut off foreign supplies.

In August 1914 the Netherlands Government turned its attention to assuring imports of feed and artificial fertilizers. Sufficient fertilizers were available for the harvest of that year, but in 1915 a special Artificial Fertilizers Commission was established. In 1918 this became the Government Bureau for Artificial Fertilizers and did much toward maintaining supplies; however, toward the end of the war there was a serious shortage of certain kinds of fertilizers.

Feed supplies were at first controlled through committees of merchants, then by a special commission; finally in 1916, as control of distribution became necessary, the Government Bureau for Distribution of Grain was established. At this time an extensive organization consisting of a central office and provincial feed bureaus was set up. The task assigned to this organization became increasingly difficult toward the end of the war, when imports ceased and domestic supplies had to be used as food rather than as feed. So many cattle, pigs, and poultry were killed that rationing and a prohibition against slaughtering became necessary.

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NETHERLANDS: GRAIN SUPPLIES AS RELATED TO PORK EXPORTS

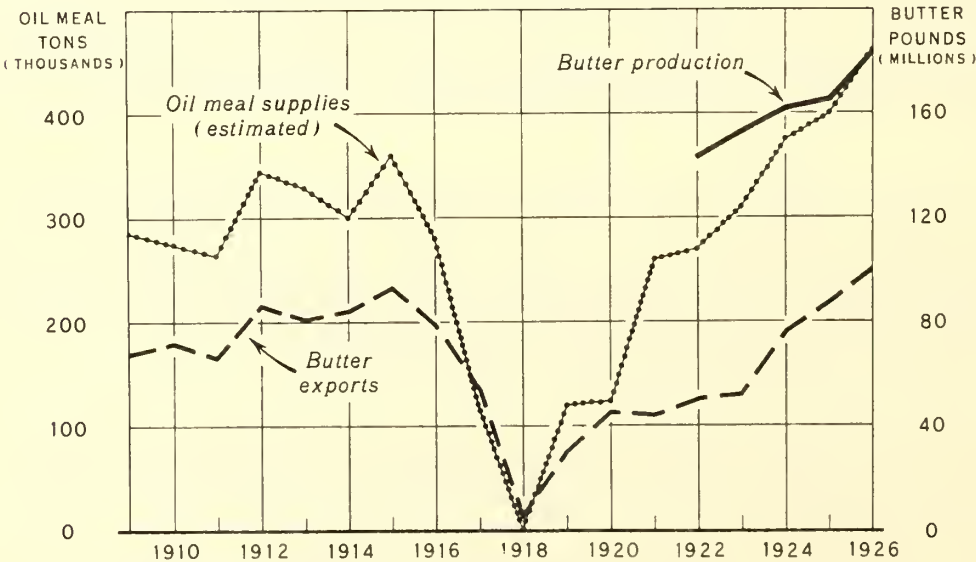


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Figure 10.—Netherlands grain supplies as related to pork exports, during the World War period.

NETHERLANDS: BUTTER EXPORTS AS RELATED TO OIL MEAL FEED SUPPLIES



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Figure 11.—Netherlands butter exports as related to oilmeal feed supplies, during the World War period.



The immediate effect on exports at the outbreak of war was a complete loss of markets. This situation was short-lived, however, and when a lively export demand was resumed prices rose sharply. Control of exports became necessary to protect home consumers, and these controls became very complicated. The general policy was that exemption from the export prohibition could be obtained for a certain part of the production if the remainder was made available for home consumption at a price lower than that which could be obtained for export.

Central bureaus for various articles were established to control the execution of the regulations. It was believed that this was a temporary situation, since the war would soon be ended; hence as the war continued more bureaus became necessary, and complications arose because of the organizational set-up. In 1916 a new organization was established with the intention of providing better coordination and cooperation. The producers and exporters of each product formed an association to supervise the formulation of regulations, with the result that organizations were far more comprehensive. Distribution was centralized in the Government Central Administration Office for the Distribution of Provisions, and was controlled by the burgomasters of the various communes. Under this organization unions of producers and exporters controlled almost every vital commodity. Toward the end of the war, as exports dwindled, home distribution became the main issue; and the unions were replaced in 1918 by government offices.

Increased domestic production and distribution became the foremost problem in 1916, when it became increasingly difficult to import raw materials. The Distribution Act of 1916 was adopted, enabling the government to control consumption.

This required a shift in policy that has already been made in the present war, but which in 1917 was made under most stringent circumstances; namely, a shift from livestock production to production of food crops. Restrictions were placed on the cultivation of crops for export, and it became necessary to plow up meadows for crop production. Trade in agricultural products was limited through government purchases of the entire harvest and government control of distribution. This was accomplished early in the war in the case of rye, and later became necessary with wheat, barley, and oats; during 1917 and 1918 the entire harvest was delivered to the government. Prices were set by the government at high levels, in order to encourage cultivation. Government commissioners for each province were appointed to expropriate and collect grain.

#### EFFECTS OF THE PRESENT WAR

The war in Europe has placed the Netherlands' economy in an extremely difficult position. As war continues, with German occupation of the country and the British blockade cutting off raw material supplies, livestock production and exports will be greatly reduced. As a consequence, the agricultural policy of the country will have to be redirected, as during the World War, toward greater production of crops for food and away from livestock production. The use of land for food crops provides a much greater quantity of food than can be obtained from the products of livestock fed from the same amount of food.

## EFFECT ON PRODUCTION AND EXPORTS

If the war continues, the adjustment in the country's agricultural production will be forced to take place much sooner than was the case during the World War, when feed supplies were not cut off until 1917-1918. Present stocks of grain in the country and the supply of pasture during the summer will probably permit production, especially of dairy products, to be continued throughout this summer at a fairly high rate, but when feed supplies are exhausted, livestock will have to be slaughtered in order to reduce feed requirements. This should provide large supplies of meat, but after livestock numbers are reduced, meat production will be at a much lower level.

It is doubtful whether the total grain production in the country can be increased or even maintained if the blockade continues for several seasons, because supplies of commercial fertilizer will be reduced - particularly supplies of nitrogen raw material from Chile. Germany should be able to supply potash and partial supplies of phosphate in the form of slag from the continental iron industry, even if phosphate rock supplies from North Africa should not be available.

In the case of *bread grains*, about 43 percent have been imported during recent years, about four-fifths from overseas. Domestic production cannot be expanded sufficiently to meet the country's full requirements. The small portion of these grains formerly used for feed would have to be used for flour, and may be supplemented by the addition of some barley and oats and appreciable quantities of potato flour. Over a longer period of time, consumption of bread grains would have to be restricted through rationing in order to adjust it to domestic production.

In the case of *feed grains*, about two-thirds of the total requirements have been imported during recent years, almost entirely from overseas. Argentina, the United States, and Canada have been the most important suppliers. It does not appear probable that any large quantities of feed grains may be obtained from other European countries in 1940, since crop conditions in Europe appear generally unfavorable. Furthermore, any shift in use of domestic grain from feed to flour would further reduce feed supplies; therefore, if imports continue to be cut off for some time, it will be necessary for the Netherlands livestock industry to reduce its grain-feed consumption to approximately one-third of the former level.

This shortage in feed grain will probably affect *hog production* most severely, since that industry takes the largest quantity of grain. The hog industry is also dependent for protein feed on supplies of skim milk and whey from the dairy industry. Any decline in milk production, therefore, will greatly reduce the supplies available for hog feed. If the feed shortages are continued, a reduction in hog numbers to possibly one-third of the recent level may be necessary. Large meat supplies would be expected during the early period of adjustment, while heavy slaughter reduces hog numbers. Only about one-fifth of the total pork production is normally exported; consequently, any great decline in hog numbers would later reduce meat supplies to a level well below the quantity normally used for domestic consumption, and would leave none for export. It is estimated that during recent years pork and beef have each supplied nearly half of the domestic meat requirements; about 27 million pounds of beef, or only about 11 percent of total meat requirements, have been imported.

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The *dairy industry* will probably be less severely affected by the feed shortage, since pasture and roughage constitute the major part of its feed requirements; but the inability to obtain import supplies of concentrated feed in the form of oil meal and oilseeds, together with the shortage in grain, may be expected to result in a decline of about 25 percent in milk production. Any shortage in other food supplies will tend to increase the demand for fluid milk as food; consequently, a reduction in milk supplies would have to be effected largely through reduced supplies for the manufacturers of dairy products. Butter production, therefore, may be expected to decline by more than one-fourth. Furthermore, cutting off import supplies of oilseeds and vegetable oils for the manufacture of margarine would force consumers to use butter instead of margarine. Since total consumption of margarine has been greater than the total export surplus of butter, it would appear that butter exports would have to cease almost entirely unless domestic consumption of all fats and oils is greatly restricted through rationing.

In the case of *poultry and eggs* less information is available, but it may be pointed out that the number of chickens has been trebled since 1913 and that this industry also is now heavily dependent on imported feed. Cessation of feed imports would necessitate a sharp reduction in numbers and in egg production. About 62 percent of the eggs have been exported during recent years; consequently, a considerable reduction in numbers might still permit filling normal domestic requirements.

EFFECT ON BELLIGERENTS

The occupation of the Netherlands now makes available to Germany certain agricultural surpluses which were previously exported to other countries - principally to the United Kingdom. Most important of these exports are butter, condensed milk, bacon, and eggs. This shift of Netherlands exports temporarily adds to Germany's food supplies and at the same time produces a shortage of these products on the British market. If Britain fills this shortage through increased imports from other countries, the United States may eventually share to some extent in British imports of these products.

Germany formerly took only about one-fourth of Netherlands agricultural exports, particularly eggs, butter, and cheese (see table 7); but now the Netherlands' entire exportable surplus is available to Germany - not only the part formerly taken by the United Kingdom, but also, while the blockade prevents overseas exports, that portion shipped to other countries. Germany formerly obtained from the Netherlands about half of her imported cheese, one-third of her eggs, 14 percent of her butter, and only 2 percent of her meat. If the volume of Netherlands exports of these products could be maintained and were entirely available to Germany, it would be sufficient to supply two-thirds of that country's usual imports of butter and eggs, about one-eighth of the total imported meat, and would nearly double Germany's imports of cheese. However, in comparison with total German requirements of these products, including domestic production, the quantities available from the Netherlands would be equivalent to an increase of only between 9 and 17 percent of Germany's total requirements of butter, cheese, and eggs, and only 1 percent of its meat requirements.

TABLE 10.—*Netherlands trade with principal countries, 1934-1938*

COUNTRY	IMPORTS					EXPORTS				
	1934	1935	1936	1937	1938	1934	1935	1936	1937	1938
European:	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000
Germany	201,016	162,058	151,027	180,224	165,520	119,027	87,521	74,507	96,948	84,648
United Kingdom	65,466	59,134	59,877	71,031	63,340	91,045	96,365	105,082	136,344	128,714
France	30,214	29,861	26,739	32,950	35,715	38,855	31,891	34,808	41,779	33,118
Belgium and Luxembourg.....	72,763	60,921	75,705	98,859	89,232	54,944	48,321	54,352	69,287	58,152
U.S.S.R.	18,021	15,235	14,030	22,257	17,469	5,328	7,447	11,072	12,152	12,847
Other	80,274	63,782	62,270	93,319	89,630	69,151	69,236	60,178	84,836	75,701
Western Hemisphere:										
United States	46,633	43,883	46,015	75,052	84,367	15,144	22,451	28,308	31,848	20,430
Argentina	48,624	50,104	42,786	57,376	35,284	4,223	5,039	6,529	10,451	6,437
Other	16,875	19,367	29,093	29,975	33,677	6,391	9,029	8,911	9,468	13,236
Netherlands Indies ...	39,377	38,689	50,389	69,499	55,955	20,539	21,549	27,674	51,606	54,895
All other countries ..	80,360	83,719	89,413	122,747	111,061	52,769	56,223	60,641	87,258	80,093
Total all countries ..	699,623	635,753	647,394	853,239	781,250	477,421	455,637	472,062	631,977	568,271
Percent of total:										
United States	6.7	6.9	7.1	8.8	10.8	3.2	4.9	6.0	5.0	3.6
Belgium	10.4	11.0	11.7	11.6	11.4	11.5	10.7	11.5	11.0	10.2
France	4.3	4.7	4.1	3.9	4.5	8.1	7.0	7.4	6.6	5.8
Germany	28.7	25.5	23.3	21.1	21.2	24.9	19.2	15.7	15.3	14.9
United Kingdom	9.4	9.3	9.2	8.3	8.1	19.1	21.1	22.3	21.6	22.7
Netherlands Indies ..	5.6	6.1	7.3	8.1	7.2	4.3	4.7	5.9	8.2	9.7

Compiled from Foreign Commerce Yearbook, 1938, and additional data available in the Bureau of Foreign and Domestic Commerce.

It has already been pointed out, however, that as the blockade is continued the Netherlands' present ability to export livestock products will be greatly reduced and will probably be entirely stopped as soon as present livestock numbers are decreased, when feed stocks are exhausted and the pasture season closes. Consequently, Germany has the immediate advantage of considerably increased supplies of livestock products from the Netherlands; it must, however, soon assume the responsibility of supplying enormous quantities of grain and oilseeds if the Netherlands' production and exports are to be maintained.

To the *United Kingdom* the loss of livestock products from the Netherlands is most important in the case of condensed milk and eggs. Next to Denmark the Netherlands was the United Kingdom's most important non-Empire source of dairy products, eggs, and bacon. The approximate proportion of the United Kingdom's imports and of its total requirements formerly obtained from the Netherlands is as follows:

	PERCENTAGE OF IMPORTS OBTAINED FROM THE NETHERLANDS Percent	PERCENTAGE OF TOTAL REQUIREMENTS OBTAINED FROM THE NETHERLANDS Percent
Butter	8	7
Cheese	7	5
Milk, condensed	88	30
Eggs	24	10
Bacon	6	3
All meat	2	1

To offset this loss and the loss of Danish supplies, the United Kingdom has three alternatives: it may further reduce consumption through rationing, substitute other products, or increase imports from other countries. In the case of bacon, the proportion of requirements formerly supplied by the Netherlands was only about 3 percent - an amount relatively unimportant compared to the 34 percent formerly supplied by Denmark - and may readily be replaced by other meat or by increased imports from Canada. Similarly, in the case of butter and cheese the further reduction of 7 and 5 percent is not serious and may be made up from increased imports from Australia and New Zealand, or, in the case of butter, through increased use of margarine. Denmark formerly supplied 24 percent of the United Kingdom's butter requirements.

In the case of eggs and condensed milk, the loss is more serious. The loss of 10 percent of the United Kingdom's egg requirements, in addition to the 17 percent formerly supplied by Denmark, cannot be readily replaced from British Empire countries, since these countries are not large egg exporters. Britain's imported supplies of condensed milk have been taken almost entirely from the Netherlands, and their loss reduces total supplies by nearly one-third. Adequate alternative sources of condensed milk and of powdered milk, however, are available in Empire countries.

EFFECT ON TRADE WITH THE UNITED STATES

The occupation of the Netherlands by Germany and the blockade of Dutch ports by the United Kingdom completely cuts off the Netherlands market for United States products. The value of Netherlands imports from the United States during 1936-1938

averaged about 68.7 million dollars, of which about 43 percent, or 30 million dollars, consisted of agricultural products. Netherlands total imports from the United States increased during recent years from 46.6 million dollars in 1934 to 34.4 million in 1938 and about 31.2 million in 1939. From 7 to 11 percent of the Netherlands' total imports during recent years were from the United States, and only from 3 to 5 percent of her exports were shipped to the United States (see table 10).

Market for United States agricultural products: As a market for United States agricultural products the Netherlands has in the past ranked first in continental Europe and fourth among all the countries of the world. Most important of United States agricultural products imported by the Netherlands annually in 1936-1938 in point of value were 5.3 million bushels of wheat and 406,000 barrels of flour, together valued at 8.4 million dollars; 101,000 bales of cotton, at 6.3 million dollars; 5.2 million bushels of corn, at 3.8 million dollars; 30 million pounds of fruit, at 3.4 million dollars; about 17.6 million pounds of tobacco, about half flue-cured and most of the remainder fire-cured, valued at 2.3 million dollars; and 73,000 tons of oilmeal and cake, principally linseed meal, at 2.4 million dollars. Other relatively important products were barley, rice, and, in 1939, soybeans (see table 11).

The United States supplied the following proportions of Netherlands import requirements of some of the more important agricultural products in 1936-1938. Its importance as a supplier of fruit, cotton, and oil meal should be noted.

PROPORTION OF NETHERLANDS IMPORTS OBTAINED FROM UNITED STATES

	Percent		Percent
Grain and feed:		Fresh fruit	
Wheat	28	Apples	77
Corn	14	Pears	77
Barley	10	Dried fruit	
Linseed meal	88	Apples	98
Soybean meal	54	Pears	98
Cotton	41	Prunes	97
Tobacco	27	Apricots	94
		Raisins	41

As long as the blockade continues, this market is almost entirely lost. When the war ceases and the blockade is lifted, supplies of these products in the Netherlands will be greatly reduced, and there should again be an increased demand; but this will depend primarily on the control exercised over the Netherlands and on its ability to pay for the needed imports. During the war the loss of the Netherlands market for United States agricultural products may to some extent be offset by the eventual increased shipment of livestock products to the British market, but any advantage gained in this direction will be small compared with the loss of the market for other products in the Netherlands.

Netherlands exports to United States: Netherlands total exports to the United States in 1936-1938 were valued at 27 million dollars, equivalent to only about 40 percent of the value of imports from the United States. About 38 percent of these exports may be classed as agricultural products, but more than one-third consisted of vegetable oils extracted in the Netherlands from imported oilseeds and nuts. In addition, important quantities of other products not grown in the Netherlands, such as rubber, Sumatra tobacco, and broken rice, were reshipped to the United States.

TABLE 11.—Netherlands trade with the United States in principal agricultural products, average 1936-1938

PRODUCT	UNIT	QUANTITY	VALUE	
			ACTUAL	PERCENTAGE OF TOTAL
			:1,000 dollars:	Percent
IMPORTS FROM UNITED STATES:				
Livestock products:				
Animal fats and oils ...	Ton	1,700	255	.37
Hides and skins	Ton	1,150	226	.33
Other animal products ..	Ton	3,223	509	.74
Total	Ton	6,073	990	1.44
Plant products:				
Wheat	1,000 bushels:	5,750	6,337	9.22
Corn	1,000 bushels:	5,178	3,827	5.57
Barley	1,000 bushels:	1,070	730	1.06
Rice	Ton	10,320	637	.92
Wheat flour	1,000 barrels:	406	2,111	3.07
Oil meal and cake	Ton	73,300	2,392	3.48
Cotton	Bale	100,964	6,339	9.23
Tobacco	1,000 pounds:	17,579	2,291	3.33
Fruit, fresh	1,000 pounds:	49,850	1,631	2.37
Fruit, dried	1,000 pounds:	26,800	1,616	2.35
Fruit, canned, etc.	1,000 pounds:	3,220	192	.28
Other	Ton	10,810	765	1.11
Total	—	—	23,868	41.99
All agricultural imports ..	—	—	29,858	43.43
Total all imports ¹	Ton	1,213,160	68,700	100.00
EXPORTS TO UNITED STATES:				
Livestock products:				
Butter	Ton	471	160	.59
Cheese	Ton	1,937	454	1.68
Milk, processed	Ton	5,435	468	1.73
Hides and skins	Ton	1,315	434	1.61
Other animal products ..	Ton	916	289	1.07
Total	Ton	10,074	1,805	6.68
Plant products:				
Flower bulbs, etc.	Ton	6,580	2,082	7.70
Seeds	Ton	11,720	1,610	5.96
Potato flour	Ton	6,934	315	1.17
Vegetable oils	Ton	34,700	3,960	14.65
Other	Ton	5,250	410	1.52
Total	Ton	65,234	8,337	31.00
All agricultural exports ..	Ton	75,308	10,182	37.68
Total all exports ¹	Ton	331,720	27,023	100.00

¹ Totals include nonagricultural products.Compiled from *Nederland Jaarstatistiek*, 1936-1938.

The United States was not a major market for Dutch agricultural exports except in the case of vegetable oils, powdered milk, flower bulbs, and certain seeds, such as spinach seed, caraway, and mustard. About 21 percent of the powdered milk exports and 13 percent of the bulbs were shipped to the United States.

Practically the entire United States import supplies of powdered and evaporated milk have been obtained from the Netherlands. In 1936 the United States imported from the Netherlands about 23.1 million pounds of powdered milk, 2.2 million pounds of condensed or evaporated milk, and 1.1 million pounds of butter; but by 1938 these imports had practically ceased, except for about 0.7 million pounds of evaporated milk. Imports of Dutch cheese (Edam and Gouda) during recent years have amounted to about 4 to 5 million pounds annually, equivalent to less than 10 percent of our total cheese imports. Much of our imports of gelatine, rice flour, broken rice, and practically all of our imports of potato starch have been obtained from the Netherlands.

Flower bulbs have been the most important of all Dutch-grown agricultural exports to the United States, amounting to about 2.5 million dollars annually during recent years. United States requirements of flower bulbs have been heavily dependent on imported supplies. It is variously estimated that from 80 to well over 90 percent of the tulip, hyacinth, and crocus bulbs are imported, although the percentage of narcissus imported is much smaller.

Our imports of bulbs have been almost entirely from the Netherlands, alternative sources being limited to Japan, France, and England, from whom only small quantities are obtained. Between 97 and 99 percent of our imports of tulip, hyacinth, narcissus, and crocus bulbs and corms are from the Netherlands. Quantities from that source in 1938 are as follows:

	QUANTITY <i>Million bulbs</i>	VALUE <i>Thousand dollars</i>
Tulip	97 1	1 695
Hyacinth	16 9	650
Narcissus	2 8	84
Crocus	15 8	69
Other bulbs, corms, and pips	<u>17 0</u>	<u>165</u>
Total	149 6	2 663

THE HOG INDUSTRY IN ARGENTINA

By Paul O. Nyhus*

Although hog production in Argentina is of minor importance compared with the cattle or grain farming industries of the country, it supplies domestic consumption requirements and provides an exportable surplus of frozen pork and other pork products. During the first three decades of this century the industry grew very slowly, but since 1928 slaughter numbers have about doubled. It is believed that expansion will continue, although at a less rapid rate than in the last 12 years.

Since the occupation of Denmark by Germany and its consequent removal as a supplier of British imports of bacon and pork the Argentine Government has urged increased hog production. The uncertainty of shipping facilities, however, and of whether Britain will purchase on the Argentine market will, it is thought, prevent any great wartime expansion.

Argentina is traditionally an agricultural country. There are many small manufacturing industries in and close to the city of Buenos Aires, but there are probably few countries whose resources and industries are so largely agricultural. The population of the Republic is approximately 13 million, of which number 2,300,000 are located in Buenos Aires. This city is the capital of the country and serves as the leading export and import center. There are few other cities of great size.

Due to topographical and especially to climatic conditions, a central cereal and livestock zone comprising about 25 percent of the total area of the Republic supplies most of the agricultural production of the country. This zone is approximately equivalent to the area of the states of Illinois, Missouri, and Iowa; and due to sharp changes in rainfall and differences in soil conditions there is considerable specialization in crops, pastures, and livestock production. An average corn crop of about 3.6 billion tons is produced, primarily in a central zone of deep fertile soil where the annual rainfall is in excess of 30 inches. Average wheat crops of about 6.6 billion tons are produced to the west and south of the corn zone, where the annual rainfall declines progressively to 20 inches and where the soils are less fertile. Flaxseed (about 18.7 billion tons) is grown to some extent in the corn zone, but more extensively to the east and north of the zone.

Pasture conditions also vary. Alfalfa grows especially well in a great part of the main cereal and livestock zone and provides excellent pasture for fattening steers. On the eastern side of the cereal and livestock zone it does not thrive, but

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natural grasses provide excellent pasture for breeding of cattle and sheep. Sheep grazing is well established in Patagonia, a dry region of poor pastures in the south, and on pasture lands in the northeastern part of the country. A livestock census in 1937 reported 33,207,287 head of cattle, 43,832,728 head of sheep, and 8,319,143 head of horses. Compared to these livestock industries the hog industry in Argentina is relatively small. The census taken in 1937 reported 3,965,945 head.



Figure 1.—Following traditional large-scale practices in Argentina, there are a number of estancias where more than 5,000 hogs per year are raised. Ample alfalfa pastures are provided. (Courtesy Argentine Hog Breeders Association.)

Large land holdings and large units of operation, for livestock or for crops, are characteristic of Argentine agriculture. In the province of Buenos Aires it is estimated that there are 50 landowners who hold an area in excess of 74,000 acres. Practically a minimum estancia (plantation) for purposes of breeding cattle is 6,250 acres, and most are two or three times this size. The usual size of wheat farms varies from 370 to 1,235 acres, depending upon the locality. Tenant farmers in the corn zone work about 175 to 250 acres. Grain farming and livestock farming are usually independent of and separate from each other, and there is further specialization in respect to grains grown and kinds of livestock raised. Cattle and sheep grazing are carried on largely by landowners; most of the grain production is by tenant farmers.

At various times the government has authorized credit for farmers wishing to buy breeding stock to enter the hog business. This action has recently been taken as a means of encouraging the industry and of attempting to utilize the excessive supplies of corn. Government aid to this industry, however, has been restricted to these measures.

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## SWINE PRODUCTION

## THE PLACE OF HOG PRODUCTION IN THE AGRICULTURAL ECONOMY

Considering the size of the corn crop in Argentina, the hog industry is relatively small; it supplies, however, the domestic consumption of pork products and also provides for exports of frozen pork and other pork products.

There is an inherent difficulty in fitting hog production into the organization of livestock production in Argentina. Most of the land holdings are so large that the majority of estancia owners find that they cannot devote the attention necessary for hog raising. Grain production is carried on for the most part by tenant farmers, who devote themselves almost exclusively to grain farming. Many land owners object to the feeding of hogs by tenant farmers, and most share-tenants are restricted to 5 to 10 percent of the rented area for use as pasture for work animals and a few cows. On small owner-operated farms, as well as on many tenant farms, these conditions do not apply; but the number of farms raising hogs is relatively insignificant.

## NUMBERS AND TRENDS

Since 1900 corn production in Argentina has exceeded 100 million bushels, but the hog industry is comparatively new. Prior to 1909, the annual slaughter for the entire country was less than 100,000 head, and up to 1928 it did not exceed 700,000. The industry continued to grow, however, and slaughterings reached 1 million head in 1932 and finally in 1937 the record figure of 1.6 million head. A small corn crop in 1937 brought about a sharp decline in breeding stock and in subsequent market prices, but leaders in the industry are of the opinion that the level attained in 1937 will be recovered and that an upward trend in production will continue thereafter.

The census in 1914 reported 2,900,585 head, but this figure appears large and entirely irreconcilable with the reported slaughter of that year of 226,000. A census in 1922 reported 1,436,638 head, a figure more in keeping with the reported annual slaughterings. Census reports in 1930 and 1937 indicated 3,768,733 and 3,965,945 head, respectively.

Since 1926 the monthly and annual data of hogs slaughtered by packing houses and slaughtering plants in Buenos Aires reflect cycles in the industry closely related to the hog-corn price ratios, but an upward trend to 1937 is very evident. Up to 1937 it appears that adverse hog-corn price relationships merely checked expansion and kept marketings at a rather uniform level for a year or two. Later favorable hog-corn price ratios brought about additional marketings and brought the total slaughter to new high levels.

It was only in 1937 and 1938, as a consequence of unfavorable hog-corn price relationships and a near corn failure in 1933, that a liquidation of breeding stock



took place, which brought about sharply decreased marketings in 1938 and 1939. The total slaughter in 1939 was 1,156,000 head, as compared with 1,605,000 head in 1937. Slaughtering in the *frigoríficos*, or packing plants, were practically cut in half - from 1,071,000 head in 1937 to 522,000 head in 1939. A building up of breeding stock has already occurred, however, and marketings for the first 4 months of the current year are running 5 percent more than for the corresponding period a year ago. The estimated annual slaughtering from 1920 to 1939, inclusive, are shown in table 1.

TABLE 1. - *Estimated annual hog slaughter in Argentina 1920-1939*

| YEAR       | ESTIMATED SLAUGHTER | YEAR       | ESTIMATED SLAUGHTER |
|------------|---------------------|------------|---------------------|
|            | <i>Numbers</i>      |            | <i>Numbers</i>      |
| 1920 ..... | 629,000             | 1930 ..... | 910,000             |
| 1921 ..... | 617,000             | 1931 ..... | 923,000             |
| 1922 ..... | 626,000             | 1932 ..... | 1,003,000           |
| 1923 ..... | 492,000             | 1933 ..... | 1,242,000           |
| 1924 ..... | 435,000             | 1934 ..... | 1,383,000           |
| 1925 ..... | 476,000             | 1935 ..... | 1,328,000           |
| 1926 ..... | 596,000             | 1936 ..... | 1,435,000           |
| 1927 ..... | 675,000             | 1937 ..... | 1,605,000           |
| 1928 ..... | 815,000             | 1938 ..... | 1,245,000           |
| 1929 ..... | 934,000             | 1939 ..... | 1,156,000           |

*Anuario Estadístico 1939 - Asociación Argentina Criadores de Cerdos.*

It is expected that the upward trend in production evident to 1938 will continue, but leaders in the industry do not anticipate a greatly enlarged hog industry. Due to a large per-capita consumption of beef, the domestic market for pork products is small, and there is little prospect that it will be greatly enlarged. The export demand has not been strong enough in the past to strengthen hog prices materially in relation to corn prices. The fact that the great majority of corn growers feed no hogs indicates that selling corn as a cash crop has up to the present proved more profitable than feeding it to hogs.

#### DISTRIBUTION TYPES AND BREEDS

In Argentina hog raising on a commercial scale was first attempted in the western part of the province of Buenos Aires, in a region where corn is not a sure crop because of drought conditions. The uncertainty of the corn crop, however, has tended to reduce the number of hog raisers, as well as the number of hogs, in general there has been a shifting of the industry during the past 10 years from this margin of the corn zone toward the center of the zone, where the crop is more dependable. The distribution of hog numbers is shown graphically in Figure 2. The center of the industry remains somewhat south of the center of the corn zone, and only a small part of the corn growers of the country raise hogs for the market. The volume of the industry varies greatly in different localities.



The Argentine Association of Hog Breeders (*Asociación Argentina de Criadores de Cerdos*), organized in 1922, has stimulated improvement in breeding stock. The Association has emphasized "type, not breeds," and has developed an export type designed to produce Wiltshire sides similar to the Danish product. Large-type Duroc-Jerseys and Poland Chinas have been selected for this type, selecting, however, for a cleaner shoulder and deeper hams than in the large types of these breeds in the United States. According to the 1937 agricultural census, hogs classified as Duroc-Jerseys comprise 33 percent of the total number, followed by Berkshires (15 percent) and Poland Chinas (11 percent). Two-thirds of the sales of purebred animals at hog shows and in the province of Buenos Aires from 1927 to 1939 consisted of Duroc-Jerseys.

The Association has promoted hog shows in many hog-raising districts, and the breeding stock of some of the leading breeders and hog raisers has improved; but it has been difficult to reach most of the small breeders. The difficulty in reaching the small hog raisers is attributed to two principal factors. (1) To date little, if any, premium has been paid by the packers for the improved type of hogs, and market prices have not, therefore, provided an incentive to improvement. Exports of Wiltshire sides have been extremely small, and frozen pork standards as to type are not high. (2) Little or no effective extension work designed to improve breeding stock has been carried on among the tenant farmers.

Annual block tests under the auspices of one of the leading packing plants have provided competition among the leading breeders in the production of export or bacon-type hogs. Originally some Wiltshire sides were imported from Denmark for purposes of comparison, and Danish Wiltshire sides remain the standard of comparison for leading breeders.

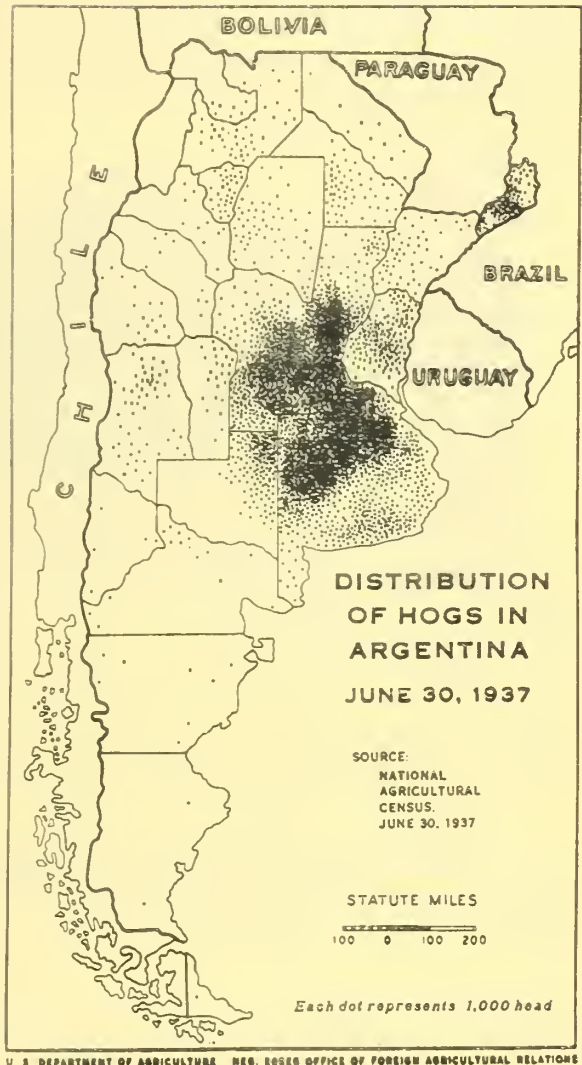


Figure 2.—Distribution of hog numbers in Argentina, 1937.

In the block test a few exhibitors have been very successful in duplicating the Danish Wiltshire sides, but the practical significance of these tests has been questioned. It is contended that the results are due to feeding and marketing unfinished hogs of a weight of about 193 pounds. It is contended further that since Duroc-Jerseys and Poland Chinas are lard-type hogs, their lard characteristics are not materially modified by selection when under farm conditions they are fattened on corn to average weights of 220 to 231 pounds. The so-called export type, therefore, becomes a market grade or classification, and not an inherent characteristic of the breed or type. The Argentine feeding practice of utilizing grass and corn almost exclusively likewise makes it difficult to duplicate the quality and type of the Danish Wiltshire sides.

#### DISEASES

In the early days of hog production in Argentina on a commercial scale, hog cholera took a heavy toll, and it was soon realized that vaccination was necessary. At present vaccination varies greatly in different localities. In some sections outbreaks of this disease are rare, losses are relatively light, and vaccination is not practiced; in others vaccination is quite general. It is estimated that most of the largest breeders vaccinate as a matter of insurance, and that for the country as a whole about 50 percent of the producers vaccinate.

Other diseases are widely prevalent. Next to hog cholera, pneumonia is considered most fatal. The prevalence of this and other lung or respiratory diseases is caused, it is believed, by the fact that little housing is provided and that sudden severe changes frequently occur in temperature and climatic condition. The percentage of hogs with tuberculosis is relatively high, particularly on farms on which skim milk or whey is fed. Carcasses rejected from direct shipments constitute about 3 percent, but make up 5 to 6 percent of the purchases in the Liniers market. In some lots the condemned carcasses constitute from 15 to 25 percent.

Worms and other parasitic infestations are general. On many estancias rotation of pastures and the use of movable watering and self-feeding equipment are employed in order to preserve sanitary conditions insofar as possible and thereby to reduce the risk of infection.

#### PRODUCTION PRACTICES

Production practices are influenced by the extremely commercial character of the industry, or of utilizing corn to advantage. In a few localities the industry has probably been established because of the poor market quality or high moisture content of the corn; but this does not apply to a significant proportion of total production, since there are probably few corn-producing countries in which production is so exclusively of hard, dry, marketable corn as in Argentina. Some hogs are fed on farms where skim milk or whey is utilized; but this practice likewise is not extensive in relation to the number of hogs raised exclusively on pasture and corn. There is little departure from so-called "camp" or country methods of

production, characterized by relatively large-scale operations, no housing, and extensive use of pastures.



Figure 3.-Feeding corn out of native corn cribs, or *trojes*. (Courtesy Argentine Hog Breeders Association.)

It is estimated that the majority of the market hogs are produced on farms carrying 10 to 40 sows. Possibly 15 percent are produced on farms with 50 to 100 sows, and about 20 percent are raised in large-scale breeding of 500 or more. In the latter group are included about 100 farmers with 500 sows and 10 farmers with more than 1,000 sows. The largest breeder at present has about 3,000 sows, and 2 years ago marketed 30,000 hogs. The number of extremely large-scale operators was formerly greater than at present.

Practices on both large- and medium-sized farms are on an extensive scale and are organized so as to involve a minimum of labor and care. It is emphasized that hogs are not given the attention and care customary in most countries. Investment in buildings and housing is kept to a minimum. Farrowing is in the open under sloping *chapas*, or metal sheets, that serve as a protection from rains and winds. These are frequently covered with hay or straw, as shown in Figure 4, and straw is provided for bedding at farrowing time.

Considerable fencing is constructed to provide individual pasture plots or pens at farrowing time and to furnish larger pasture lots for sows with small pigs. Feeding platforms are built for small pigs to enable them to get supplementary grain





Figure 4.—Farrowing in the open under *chapas*, or metal sheets, is the usual practice in Argentina. Storms and cold weather cause heavy losses of small pigs due to inadequate housing. (Courtesy Argentine Hog Breeders Association.)

is merely a grain supplement. It is recognized that due to the growth made on pastures, pork production is probably as cheap in Argentina as in any country; but the quality of the pork is also lower than it would be if more grain were fed during the growing period and less gain made entirely on pasture. Most of the hogs are marketed at a weight of 220 pounds. The majority of the corn grown in Argentina is flint corn, but some growers plant dent corn expressly to feed to hogs. There is no export market for dent corn.

Considering the fact that 2 litters per year are usual, the number of pigs saved per sow is small. The large-scale operators estimate 6 to 7 hogs marketed per sow for the 2 litters. On the smaller farms the number saved is larger, but on all farms the losses in small pigs are heavy. This is due, it is believed, to lack of care and attention. Because of poor housing facilities, storms, cold winds, and rains take a heavy toll. Losses from worms and various diseases are also severe. The large operators maintain that heavy losses are inevitable with the large-scale practices that are followed.

#### HOG-CORN PRICE RATIOS

Hog feeding in Argentina is a highly commercialized operation in which the hog-corn price ratio determines whether or not results are profitable and satisfactory. Because of the significance of the hog-corn price ratios and the wide fluctuations therein, producers and others maintain that feeding hogs is a speculation and lacks stability. Hog prices have been fairly stable since 1934, ranging from 4.05 to 5.40

rations, built, as is all other equipment, so that they can be moved about by horses. Efforts are made to rotate pastures so as to reduce the hazards of diseases and worms resulting from insanitary conditions. Dipping for lice and skin troubles is customary on the larger farms.

Pasture is provided abundantly. For most of the year this consists of alfalfa, but for fall litters supplementary rye and barley pastures are provided. It is estimated that the first 198 pounds of weight is made largely on pasture in which corn

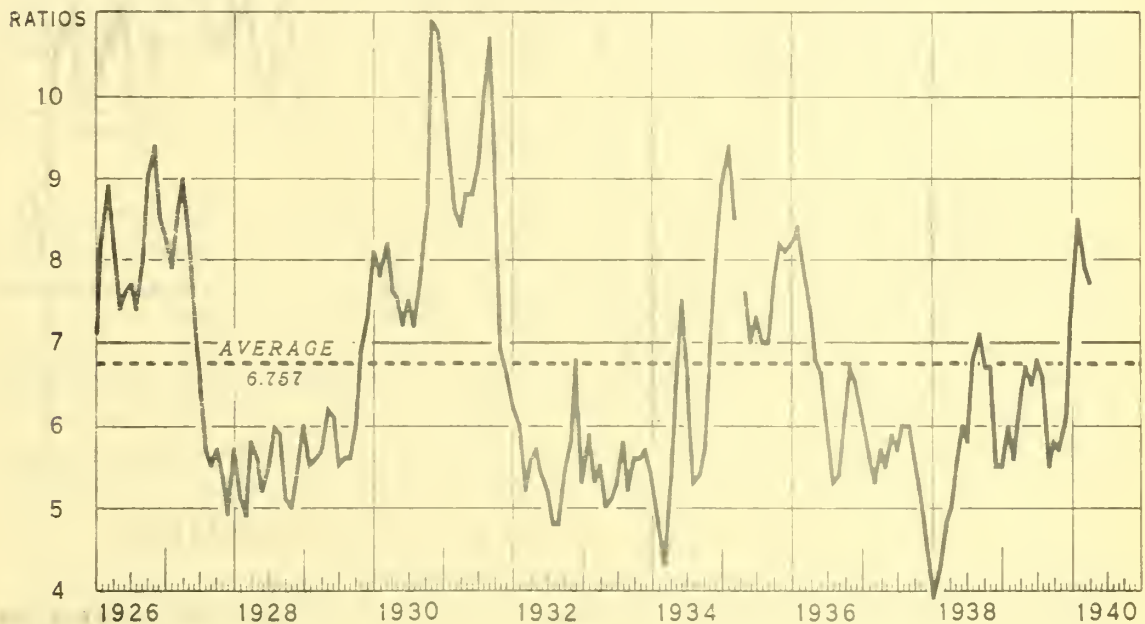


cents per pound for hogs delivered at the packing plants, but corn prices have varied from 34 to 75 cents per bushel and have brought about corresponding extremes in the hog-corn price ratios. Since 1934 these ratios have ranged from 3.9 to 10.9, compared with American hog-corn ratios of 7.0 and 19.5, respectively.

Due to the marketability or cash-crop character of corn production in Argentina, these great changes in the hog-corn price ratio are undoubtedly of more significance than would be the case under feeding conditions in the United States, where so much low-grade corn is fed. The wide fluctuations in the ratios explain the emphasis of corn growers and hog raisers on the highly speculative character of the enterprise. However, in spite of the speculative character of and frequently adverse returns from feeding corn, it appears that marketing some corn in the form of fat hogs is appealing to more farmers each year; and the trend of production is upward.

### HOG-CORN PRICE RATIOS IN ARGENTINA

(BASED ON PRICES PER 100 KILOS)



U.S. DEPARTMENT OF AGRICULTURE

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Figure 5.--Hog-corn price ratios in Argentina, 1926-1940.

The hog-corn price ratios on the Buenos Aires market since 1926 are shown in Figure 5. Corn prices have varied from 3.57 to 10.05 pesos per 100 kilograms, equivalent to 26 to 75 cents per bushel at the present rate of exchange. Prices of hogs have varied from 20 to 59 centavos per kilogram, equivalent to 2.7 to 8 cents per pound at present exchange.<sup>1</sup> In view of the metric units employed, the hog-corn

<sup>1</sup> One peso at the current official rate of exchange = 29.7733 cents; one centavo at the current official rate of exchange = .297733 cent.

price ratio is determined by prices of both hogs and corn on the basis of 100 kilograms. The average of these ratios from 1926 to date is 6.75, or 12.0 in American units.

It will be noted that for considerable periods this ratio falls as low as 5.5, and when hog prices are favorable in relation to corn prices, this ratio rises to 8 and 9. The unfavorable ratio from the beginning of 1937 to February of this year is due primarily to high prices for corn. Also, extremely small crops in both 1938 and 1939 reduced supplies of corn on many farms, so that in many cases feeding of hogs would have necessitated buying corn.

With the large crop of corn now being harvested and the difficulty in effecting export sales because of the war, corn prices have dropped to extremely low levels, and the hog-corn price ratio has been very favorable to the feeding of hogs. Hog prices were high and fairly constant during 1938 and 1939, when market receipts were sharply reduced, but have fallen off sharply the past month - partly because of additional market receipts, but more particularly because of the difficulty of ocean shipping and lack of export markets.

#### MARKETING

The purchase of cattle on the estancias by packing-house buyers is one of the distinctive features of marketing in Argentina. These cattle are subsequently shipped directly to the packing plants. Shipment of hogs direct from the country to the plants is likewise general, but the hogs are not bought on the estancias. They are shipped to the packing plants, and the grading and prices paid by the plants upon arrival are accepted by the shippers. Most of the direct shipments are made by local hog buyers, who purchase from the farmers and assemble large numbers for shipment to the packing plants and the Liniers market. The large hog raisers make direct shipments of their own hogs to the packing plants. In some years the direct shipments to the packing plants are about equal to the shipments made to the public stockyards at Buenos Aires, but in other years, such as in 1937 when the slaughtering by the *frigoríficos* reached a record amount, direct shipments to the packing plants are twice those to the Liniers public stockyard (a large public stockyard near Buenos Aires).

Prices paid for the direct shipments, or on what is termed "prices to be fixed," are higher than in the Liniers market. On direct shipments no settlement is made until the hogs have been killed, and a shipper is not paid for rejected or condemned carcasses. As previously stated, rejections amount to about 3 percent for the direct shipments but are estimated to be 5 or 6 percent on purchases in the Liniers market.

The public stockyards at Buenos Aires are primarily a source of supply for the hundreds of wholesale dealers and distributors who buy hogs in the Liniers market and have them slaughtered in municipal and other slaughtering plants. Together with the packing plants, these wholesale meat distributors supply the thousands of meat shops and markets scattered throughout the city.

Monthly data on receipts at the packing plants and public stockyards at Buenos Aires show the heaviest receipts during the winter months of June, July, and August. Receipts in these months are usually twice as large as those during the summer months of December, January, and February. When the annual receipts are about 1.2 million head, January receipts are approximately 60,000 and August receipts 120,000 head.

At the present time it is estimated that fully one-third of the receipts at packing plants and at the Liniers market arrive by truck and that the truck movement is increasing. At a packing plant at Rosario, in the center of the corn zone, it is estimated that 60 percent of the receipts are brought by truck.

The sources of the hogs purchased by the packing plants consist chiefly of direct shipments, but also include purchases in the Liniers market, in public auctions, and in the Rosario market. Data from 1935 to 1939 are shown in table 2.

TABLE 2. Numbers of hogs purchased by Argentine packing plants, 1935-1939

| SOURCE OF PURCHASE     | 1935    | 1936    | 1937      | 1938    | 1939    |
|------------------------|---------|---------|-----------|---------|---------|
|                        | Numbers | Numbers | Numbers   | Numbers | Numbers |
| Direct shipments ..... | 746,910 | 939,825 | 909,202   | 556,045 | 445,470 |
| Liniers market .....   | 156,369 | 46,326  | 129,193   | 128,385 | 45,098  |
| Rosario market .....   | 4,250   | 3,889   | 6,972     | 3,192   | 937     |
| Auctions .....         | 4,592   | 1,762   | 5,485     | 6,913   | 6,250   |
| Total .....            | 912,121 | 991,802 | 1,050,852 | 694,535 | 497,755 |

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It will be noted that almost 90 percent of the number of hogs purchased by the packing plants consist of direct shipments from the estancias, and about 10 percent are purchased in the public stockyards at Liniers.

Slaughtering at municipal and other slaughtering plants at Liniers during the last 5 years have ranged from 260,000 to 377,000 head. Slaughtering by the packing plants during this same period have ranged from 522,000 to 1,071,000 head. These data are included in table 3. To approximate the total annual slaughter it is estimated that there is an additional local slaughter throughout the country of about 150,000 to 200,000 head.

TABLE 3. Numbers of hogs slaughtered at Argentine packing plants and at Liniers, 1935-1939

| SLAUGHTER HOUSE                | 1935      | 1936      | 1937      | 1938      | 1939    |
|--------------------------------|-----------|-----------|-----------|-----------|---------|
|                                | Numbers   | Numbers   | Numbers   | Numbers   | Numbers |
| Packing plants .....           | 912,444   | 987,056   | 1,071,151 | 719,662   | 522,477 |
| Liniers slaughtering plants .. | 260,134   | 282,588   | 328,142   | 320,670   | 376,641 |
| Total .....                    | 1,172,578 | 1,269,644 | 1,399,293 | 1,040,332 | 899,118 |

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## CONSUMPTION AND TRADE

During the past 10 years the estimated annual slaughter in Argentina has varied from 910,000 to 1,605,000 head. Slaughter for domestic consumption has ranged from 704,000 head in 1930 to 1,039,000 head in 1937, or from 68 to 82 percent of the total slaughter. The per-capita consumption in the city of Buenos Aires has increased during the past 20 years from 22.7 pounds to 37.3 pounds, but meat consumption in Argentina consists largely of beef and mutton, with pork products relatively unimportant. Prices of beef are extremely low, and the quality is excellent. Current prices of prime steers are equivalent to 4 cents per pound, and prices of beef in the retail markets are correspondingly low.

## CONSUMPTION

Fresh pork rarely appears in the Argentine cuisine, and it is stated that Argentines have little liking for it. Smoked hams and bacon are slightly more popular but are not widely consumed. Cold smoked ham and cold boiled ham are the most popular pork products and are used widely in a first course consisting of cold meats. This course also frequently includes cold pork of roasted suckling pigs and spiced meats in which pork is used in varying percentages. The demand for pork products, therefore, is such that consumption, even at low prices, is relatively small.

The trend of domestic consumption, however, is upward, as indicated in table 4, which shows the estimated annual slaughter for domestic consumption and for exports since 1920. It will be noted that the slaughter for domestic consumption increased from 345,723 head in 1920 to a peak of 1,039,000 head in 1937. The domestic market has absorbed from 70 to 80 percent of the annual slaughter. Some improvement in the level of exports took place in this period, but it has been chiefly expansion of the domestic market that has absorbed the increased production of hogs. With these relatively restricted markets for hog products, the hog industry has provided an outlet for comparatively small amounts of corn, compared with the European markets available for corn as a feed grain.

## THE EXPORT MARKET

Prior to 1929 there was considerable confidence in the export market for pork products and in the ability of Argentina to enlarge its share of that market. With the depression beginning in 1930, however, and subsequent trade barriers, quotas, etc., the export market prospect was considerably narrowed. Prior to the outbreak of the war in September 1939, the Argentine bacon quota in the United Kingdom was 0.7 percent, and the quota for frozen pork was 13.2 million tons.

Packing plants have been enterprising and resourceful in preparing most mixtures containing pork and in developing new markets for canned and cured meats, both in the domestic and in the export trades; but it has been difficult to expand the export outlets substantially, and the export volume remains relatively small. It is stated that the quality of Argentine pork is not so high as that produced in the



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leading European exporting countries, due to the practice of feeding large amounts of grass and the exclusive use of corn for fattening - sometimes for comparatively short periods.

TABLE 4. - *Estimated hog slaughter in Argentina for domestic consumption and export, 1920-1939*

YEAR	EXPORTED	PERCENTAGE EXPORTED	CONSUMED DOMESTICALLY	PERCENTAGE CONSUMED DOMESTICALLY	TOTAL SLAUGHTERED
	<i>Numbers</i>	<i>Percent</i>	<i>Numbers</i>	<i>Percent</i>	<i>Numbers</i>
	:	:	:	:	:
1920	283,530	45	345,723	55	629,000
1921	227,740	37	389,475	63	617,000
1922	250,823	40	375,364	60	626,000
1923	88,828	18	403,630	82	492,000
1924	24,306	6	410,606	94	435,000
1925	38,341	8	437,200	92	476,000
1926	132,713	22	463,172	78	596,000
1927	70,364	10	604,424	90	675,000
1928	163,080	20	651,970	80	815,000
1929	241,881	26	691,763	74	934,000
1930	206,111	23	704,040	77	910,000
1931	163,592	18	759,874	82	923,000
1932	212,879	21	790,296	79	1,003,000
1933	311,305	25	931,080	75	1,242,000
1934	425,290	31	957,529	69	1,383,000
1935	399,912	30	927,915	70	1,328,000
1936	416,369	29	1,018,593	71	1,435,000
1937	515,607	32	1,089,462	68	1,605,000
1938	347,733	28	897,004	72	1,245,000
1939	250,836	22	905,661	78	1,156,000
	:	:	:	:	:

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Frozen pork comprises the bulk of the exports, as indicated in the annual statistics of exports of pork products since 1935 (see table 5), followed by smoked pork products - chiefly hams, but also some bacon. Lard exports have been relatively large in some years. The United Kingdom has been the leading market for frozen pork exports, as shown in table 6, and has also taken fully 80 percent of the smoked ham exports.

TABLE 5.—Exports of pork products from Argentina, 1935-1939

PRODUCT	1935	1936	1937	1938	1939
	: 1,000 tons	: 1,000 tons	: 1,000 tons	: 1,000 tons	: 1,000 tons
	:	:	:	:	:
Fresh pork	10,088	9,793	10,602	9,232	6,920
Smoked products	4,410	6,237	10,744	8,457	5,103
Salted pork	2,691	3,630	3,500	2,230	1,998
Chilled pork	30	30	21	17	13
Lard	8,730	13,341	13,095	4,161	4,232
Total	25,949	33,031	37,962	24,097	18,326
	:	:	:	:	:

Bureau of Statistics of Argentina.

TABLE 6.—Argentine exports of frozen pork by country of destination, 1935-1939

COUNTRY OF DESTINATION	1935	1936	1937	1938	1939
	: 1,000 tons	: 1,000 tons	: 1,000 tons	: 1,000 tons	: 1,000 tons
	:	:	:	:	:
United Kingdom	9,659	9,351	7,757	8,579	6,623
British possessions	163	179	243	155	71
Italy	26	10	2,052	119	30
Germany	101	58	185	78	14
France	25	46	153	74	39
Netherlands	1	2	86	4	3
Spain	29	1	—	110	2
United States	23	95	44	37	32
Others	55	51	82	74	101
Total	10,087	9,793	10,602	9,230	6,920
	:	:	:	:	:

Anuario del Comercio Exterior, Argentine Ministry of Finance; *Boletín de Estadística Agropecuaria*, Argentine Ministry of Agriculture.

WARTIME PROSPECTS

Argentina is harvesting a large crop of corn, estimated at 11.7 billion tons. On the basis of this estimate an exportable surplus of approximately 9.4 billion tons is expected. Export demand has been especially slight, partly because of the limited amount of ocean shipping space and the high rates. It is improbable that the entire crop can be marketed, and prices have accordingly dropped to low levels. The present price of corn in Buenos Aires of 3.95 pesos per 100 kilograms is equivalent to 30 cents per bushel, and it is said that ear corn can be bought on farms at 23 cents per bushel (3 pesos per 100 kilograms). Even with hogs selling recently at prices as low as 30 centavos per kilogram or 14.0 cents per pound, it is apparent that feeding corn is profitable at the present time.

With the occupation of Denmark by Germany and the removal of Denmark as a source of supply to England for bacon and pork, the Minister of Agriculture in a public appeal to farmers urged the breeding and feeding of more hogs. The Minister held out no direct prospect for live hog prices but stated that England was cut off from her Danish supplies and implied that there should be a market for Argentine pork products in England. It was stated that feeding more corn would help to dispose of the large surplus stocks.

Breeding more sows and gilts at this time will increase the amount of corn used for feed after January 1941, but cannot contribute greatly to the disposal of the present corn surplus. Meevil damage is so great in corn carried through the summer months of January, February, and March that it is difficult to carry over much corn into the new crop year beginning April 1. An expanded hog industry, therefore, will chiefly affect the feed requirements from the 1941 crop, for which production and prices are uncertain.

Several leaders in the industry state that as a result of the present favorable hog-corn price relationship, many farmers are now interested in hog raising; and that, considering also the expansion of those already raising hogs, there will be a substantial recovery in breeding and feeding operations from the low 1939 level. Many farmers recall that corn became so cheap during the last war that it was used for fuel.

The uncertainties, however, of an increased demand arising out of the war situation will prevent a great expansion. The spring and fall litters of this year will not be marketed until about the middle or end of 1941, by which time the war may be over. Uncertainties as to shipping facilities and as to English purchases in this market further complicate the outlook for larger foreign markets and for increased hog prices as a result of the war situation. At the moment export markets are extremely poor, and the Hog Breeders Association is studying means of stimulating domestic consumption in order to absorb the current and prospective market receipts.

